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In the Supreme Court

OF THE

United States

OCTOBER TERM, 1985

SAN LUIS OBISPO MOTHERS FOR PEACE;
SCENIC SHORELINE PRESERVATION CONFERENCE;
ECOLOGY ACTION CLUB; SANDRA SILVER;
GORDON SILVER; ELIZABETH APFELBERG;
and JOHN J. FORSTER,
Petitioners,

CORRECTED COPY

VS.

UNITED STATES NUCLEAR REGULATORY COMMISSION;
and THE UNITED STATES OF AMERICA,
Respondents.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

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July 18, 1986

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QUESTION PRESENTED FOR REVIEW

Having determined by regulation that the Atomic Energy Act prohibits the licensing of a nuclear power plant unless the public health and safety is protected by emergency planning independent of engineered design safeguards, did the Nuclear Regulatory Commission — affirmed by a 5-4 decision of the District of Columbia Circuit — err in licensing the Diablo Canyon Nuclear Power Plant without requiring any emergency planning for the safety hazard of greatest concern in the design of the plant — an earthquake on the major active earthquake fault lying less than three miles from the plant site?

PARTIES TO THE PROCEEDINGS

Petitioners:

San Luis Obispo Mothers for Peace
Scenic Shoreline Preservation Conference
Ecology Action Club
Sandra Silver
Gordon Silver
Elizabeth Apfelberg
John J. Forster

Respondents:

United States Nuclear Regulatory Commission
United States of America

Intervenors:

Pacific Gas and Electric Company

A list of the subsidiaries of Pacific Gas and Electric Company is set forth in the Appendix, at D-1.

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Respondents.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

Petitioners respectfully pray that a writ of certiorari issue to review the 5-4 decision of the United States Court of Appeals for the District of Columbia Circuit, sitting *en banc,* entered in this consolidated proceeding on April 25, 1986.

OPINIONS BELOW

The initial 2-1 decision of the District of Columbia Circuit was entered on December 31, 1985 and is published at 751 F.2d 1287 (D.C. Cir. 1984). Following petitioners' application for rehearing and suggestion for

rehearing *en banc,* the full Court of Appeals vacated the panel's decision in part and granted rehearing *en banc.* 760 F.2d 1320 (D.C. Cir. 1985). The decision and judgment of the *en banc* Court after rehearing were issued on April 25, 1986. The majority and dissenting opinions are reported at 789 F.2d 26 (D.C. Cir. 1986) and are reproduced in their entirety in the Appendix hereto, at A-1-74.

The NRC decisions reviewed were issued on August 10, 1984 and are published at 20 NRC 267 (1984). The majority and dissenting opinions regarding emergency planning are reproduced in the Appendix hereto, at B-1-25.[1]

JURISDICTION

This Court's jurisdiction is invoked under 28 U.S.C. § 1254(1). The judgment that is the focus of this petition was entered on April 25, 1986. Jurisdiction in the Court of Appeals was based on 42 U.S.C. § 2239.

STATUTES AND REGULATIONS INVOLVED

1. 42 U.S.C. § 2012
2. 42 U.S.C. § 2133(a) and (d)
3. 42 U.S.C. § 2239(a)
4. 10 C.F.R. § 50.47

The texts of the foregoing provisions are set forth in pertinent part in the Appendix hereto, at C-1-6.

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[1]By order dated June 25, 1986, the Court of Appeals consolidated petitioners' separate appeals of the licensing of Diablo Canyon's Units 1 and 2 reactors. Consequently, the Court of Appeals' decision that is the subject of this petition applies to both reactors.

STATEMENT OF THE CASE

This petition arises out of a vigorously contested administrative proceeding regarding construction and licensing of the twin-1140 megawatt reactors at the Diablo Canyon Nuclear Power Plant ("Diablo Canyon"), located on the central coast of California. Petitioners[2] seek this Court's review of a 5-4 decision of the District of Columbia Circuit, sitting *en banc,* upholding the Nuclear Regulatory Commission's ("NRC" or "Commission") determination as a matter of law under the Atomic Energy Act and NRC regulations that the safety hazard of greatest concern in the design of Diablo Canyon — an earthquake on the Hosgri Fault lying less than three miles from the plant — is immaterial to, and may not be considered in public hearings regarding, emergency planning for the facility.

A. Administrative Proceedings

Diablo Canyon was designed and partially constructed before the belated discovery in 1973 of a major active earthquake fault — the Hosgri Fault, with a postulated magnitude of 7.5 on the Richter Scale — lying less than three miles offshore.[3] As a result of that discovery, the NRC required Pacific Gas and Electric Company

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[2]Petitioners herein comprise various citizen organizations and individuals that have participated for over fifteen years in the administrative licensing proceedings below.

[3]The closest fault was assumed to be about 12 miles away, with a postulated magnitude of 6.75 on the Richter scale. *See Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2) (hereafter cited as *"Pacific Gas and Electric Company"),* ALAB-644, 13 NRC 903 n.4 (1981). The 7.5 postulated magnitude of the Hosgri Fault is a significantly larger "magnitude potential" than the largest fault previously assumed. *Id.*; *Pacific Gas and Electric Company,* ALAB-519, 9 NRC 42, 45 (1979).

("PGandE") to reanalyze and redesign the facility to withstand earthquake forces at least twice those of any other nuclear plant in the country.[4] Due to a quality assurance breakdown in that seismic reanalysis process, thousands of errors in the plant's design and construction were discovered during the early 1980's — necessitating the redesign of Diablo Canyon yet again in order to bring the facility into compliance with the Commission's seismic design standards.[5]

Although the Commission ultimately approved Diablo Canyon's design, this history of seismic and design problems has assumed special significance in the context of the Commission's review of Diablo Canyon's emergency response plans, required by NRC regulation under the Atomic Energy Act independent of, and in addition to, design safeguards as a mandatory precondition to issuance of an operating license. 10 C.F.R. § 50.47(a). As early as 1980, the Commission's technical staff recognized the relevance of earthquake activity to emergency response planning by requesting that PGandE and the Federal Emergency Management Agency give special consideration to potential seismic complications — *e.g.*, disruption of communications networks and transportation routes — on emergency response to an accident at Diablo Canyon. Similarly, in the context of public hear-

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[4]The one exception is the San Onofre Nuclear Generating Station, located on the southern coast of California. San Onofre is designed to seismic standards only slightly less stringent than those imposed at Diablo Canyon.

[5]*Pacific Gas and Electric Company,* CLI-81-30, 14 NRC 950 (1981) (order suspending low power operating license due to discovery of quality assurance breakdown in seismic design). This breakdown included the widely publicized "reversed blueprint" design error in which certain of the blueprints used in the seismic design of the Unit 1 reactor were inadvertently reversed.

ings held in 1982 to review all aspects of emergency preparedness at Diablo Canyon and determine whether its emergency plans are adequate to protect the public, petitioners requested specific consideration of whether those emergency plans would work in the event of a radiological accident caused by or related to the one hazard of greatest concern at Diablo Canyon — an earthquake on the adjacent Hosgri Fault.

Notwithstanding its long recognition of Diablo Canyon's unique seismic risk in the context of design, however, the Commission majority inexplicably prohibited any evidence regarding potential earthquake hazards or complications in the context of emergency planning.[6]

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[6]The Commission vacillated on the issue repeatedly. First, in the emergency planning hearings held in January 1982, the Commission, through its Licensing Board, specifically prohibited any consideration of potential earthquake complications, rejecting petitioners' every attempt to present affirmative evidence or to cross-examine witnesses on the issue, and instead promised future generic consideration of the issue. In April 1984, however, the Commission retracted its commitment to generic consideration, instead promising to "address whether to allow [some specific consideration of the effects of seismic events on emergency planning] under the circumstances in this case." CLI-84-4 (1984). When in August 1984 PGandE requested authority to commence full power operation, however, the three-member Commission majority reversed itself yet again on the still unresolved emergency planning question, announcing once more that "this issue would be pursued on a generic basis by rulemaking." CLI-84-13 (1984).

Although a Notice of Proposed Rulemaking was issued in December 1984, the Commission has taken no further action, despite the conclusion of its own expert technical review group — the Advisory Committee on Reactor Safeguards ("ACRS") — that "we see *no technical reason* for the exclusion of earthquakes from the natural phenomena considered in off-site emergency planning for nuclear power plants." ACRS, Comments on the Consideration of Earthquakes in Off-Site Emergency Planning (June 1985) (emphasis added).

Over petitioners' repeated objections and requests for hearing, the divided Commission approved the emergency plans, refused to allow any mention of earthquakes during public hearings on emergency planning (in stark contrast to all other potential hazards), and licensed Diablo Canyon for full power operation in August 1984 premised, in essence, on its conclusion that the risk of an earthquake-related accident is too improbable to warrant emergency planning and hence is beyond the scope of its emergency planning regulations and the public hearing guarantee of § 189(a) of the Atomic Energy Act.[7]

In a stinging dissent, Commissioner Asselstine charged that the "Commission's decision ignores fundamental principles of emergency planning, offends common sense, and abuses the legal process,"[8] and he characterized as "absolutely amazing" the Commission majority's refusal to allow adjudication of "an issue that the agency has itself acknowledged to be material to emergency planning.[9] Based on a detailed analysis of the purpose and

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[7] *Pacific Gas and Electric Company,* CLI-84-12 (B-1-25); CLI-84-13 (1984). The Commission reasoned (1) that Diablo Canyon's seismic design had been "reviewed to render extremely small the probability that . . . an earthquake would result in a radiologic release" (B-3-4); (2) that "earthquakes of sufficient size to disrupt emergency response at Diablo Canyon would be so infrequent that their specific consideration is not warranted" (B-5); and (3) that "[s]pecific consideration has been given in this case to the effects of other relatively frequent natural phenomena," such as "fog, severe storms and heavy rain" (B-5).

[8] *Id.,* CLI-84-12, Dissenting Views of Commissioner Asselstine (B-14).

[9] *Id.* (emphasis added) (B-13). Noting that the "cornerstone of the Commission's decision" is its reliance on low probability, Commissioner Asselstine responded that

> [t]he Commission's arguments on this score ignore one of the fundamental precepts of emergency planning: we plan for low

prior application of the Commission's regulations, the history of concern for seismic safety in the design of Diablo Canyon, and the NRC Staff's own recognition of the potential safety significance of earthquakes in emergency planning at Diablo Canyon, Commissioner Asselstine concluded that "the Commission is required by law to grant the parties an opportunity to litigate that issue" pursuant to § 189(a) of the Atomic Energy Act.[10]

B. Court of Appeals Proceedings

On August 13, 1984, petitioners filed a Petition for Review of the Commission's decision with the United States Court of Appeals for the District of Columbia Circuit and obtained a stay pending review on August 17, 1984. After a divided panel of the Court of Appeals affirmed the Commission's decision to license Diablo Canyon on December 31, 1984,[11] petitioners applied for rehearing and rehearing *en banc,* which application was granted by the full Court of Appeals on May 1, 1985, vacating the portion of the panel majority's decision that addressed the adequacy of the plant's emergency plans and the public's right to hearing on the issue under § 189(a) of the Atomic Energy Act.[12]

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probability occurrences because no matter how safe we try to make nuclear power plants there is always a possibility that some event will occur which will require use of one or more aspects of emergency planning. The probability arguments used by the Commission are really arguments that we do not need *any* emergency planning, rather than that we need not consider earthquakes in emergency planning. [B-18].

[10] *Id.* (B-23).

[11] *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission,* 751 F.2d 1287 (D.C. Cir. 1984).

[12] *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission,* 760 F.2d 1320 (D.C. Cir. 1985).

On April 25, 1986, the Court of Appeals, in a 5-4 decision, upheld the Commission's exclusion of earthquakes from the scope of its emergency planning regulations and the public hearing guarantee in § 189(a) of the Atomic Energy Act.[13] Relying on the Commission's prior approval of Diablo Canyon's seismic design, the majority asserted that the probability of an earthquake causing an accident "is so small as to be rated zero" (789 F.2d at 38) (A-26); and, relying on its own arithmetic calculations, it estimated the probability of the simultaneous occurrence of an earthquake and an independently caused accident as within the same range of probability as "the possibility that a meteorite might strike the plant." *Id.* at 37 (A-24). On this basis, the majority concluded that

> [b]ecause the NRC was not required by its regulations to consider the potential complication [*sic*] effects of earthquakes on emergency planning in its decision to license Diablo Canyon, and in fact affirmatively excluded such consideration, there is no merit to petitioners' claim that they were denied a hearing on this issue in violation of section 189(a) of the Atomic Energy Act.

Id. at 44 (A-39).

Four members of the Court vigorously dissented, calling the NRC's decision "inexplicable in legal, logical, or common sense terms," "arbitrary and capricious on its face," and

> woefully inadequate as a piece of logical reasoning, lacking in record support, and patently inconsistent with other interpretations of the emergency planning

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[13] *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission*, 789 F.2d 26 (D.C. Cir. 1986) (A-1).

> regulations as well as the underlying purposes of those regulations.

Id. at 46, 60 (A-43-44, 72). Written by Judge Wald, the lengthy and comprehensive dissent charges that the Court majority's opinion deferring to the Commission "*in toto* effectively nullifies emergency planning . . ." and "never faces up to petitioners' most telling argument: that the Commission's interpretation of its emergency planning regulations is inconsistent with the fundamental purposes of those regulations." *Id.* at 46, 48 (A-43, 47). Characterizing the Commission's action as "inconsistent with the terms of its own regulation and guidance document and with other interpretations of the same regulations," the four dissenting members of the Court concluded that

> [i]t defies common sense to exclude evidence about the complicating effects of earthquakes from a proceeding dealing with how to respond to a nuclear accident at a plant located three miles from an active fault, a plant in which seismic concerns dominated the design and construction proceedings for well over a decade. . . . The majority has allowed the Commission to interpret its regulations in a manner which undermines the basic purpose of emergency planning and singles out earthquakes for different treatment from other offsite natural phenomena, without giving any good reason for its neglect.
>
> The Emperor has no clothes — earthquakes should have been considered in the emergency planning for a radiological accident at Diablo Canyon. The county government knows this and has factored them into its emergency plans; PG&E commissioned a study on earthquakes at the NRC staff's request and then was told there was no need to litigate or implement it. After more than ten years of public alarm, only a

> divided Commission and this divided court persist in pretending that earthquakes are not material to emergency planning for a nuclear plant located only three miles from an active geological fault. If that judgment is at fault, history will allow no rehearing.

Id. at 60-61 (A-72, 73-74).

On July 18, 1986, petitioners filed this Petition for a Writ of Certiorari to the Court of Appeals for the District of Columbia Circuit.

REASONS FOR GRANTING THE WRIT

This Court should grant the petition for writ of certiorari. First, as the Court of Appeals recognized in granting *en banc* review below, this case presents a question of exceptional importance, not only to the immediate parties who have participated for over fifteen years in the Diablo Canyon licensing proceeding, but to the public generally. By a vote of 5-4, the sharply divided *en banc* Court deferred to the Commission majority's disregard of the mandatory emergency planning safety regulations promulgated under the Atomic Energy Act in the aftermath of the 1979 Three Mile Island Nuclear Power Plant accident as essential to protect the public health and safety. Adopted not as a mere alternative to engineered design safeguards but as a needed safety-related reform, these emergency planning requirements were explicitly imposed to insure the public's ability to respond promptly and effectively in the event of a major nuclear accident — independent of safety systems designed to prevent an accident. In this case, the divided Commission refused to enforce those emergency planning regulations for the safety hazard of central importance for over a decade in the design of Diablo Canyon — a major earthquake on the fault lying less than three miles away — and, in the context of emergency planning hear-

ings under § 189(a) of the Atomic Energy Act, flatly denied the public's right even to ask whether Diablo Canyon's emergency plans would work in the event of an earthquake-related accident at that plant. Because the Commission's action so clearly implicates important public safeguards and rights under the Atomic Energy Act and the NRC's essential emergency planning standards, and in view of the sharply divided decision of the *en banc* Court of Appeals on review of that action, the requested writ should issue.

Second, the District of Columbia Circuit majority's decision conflicts with the standards governing judicial review of administrative agency decisions, long established in the decisions of this Court. Rather than support its decision with factual evidence and reasoned analysis, the Commission disregarded the explicit purpose of its own regulations, reversed its established practice and policy, ignored the counsel of its own staff, and failed to provide a factual basis for its *ipse dixit* that the approved seismic design safeguards at Diablo Canyon rendered the risk of an earthquake too insignificant to warrant any consideration in emergency planning. In nonetheless affirming the Commission, the District of Columbia Circuit majority attempted to salvage the agency's decision by substituting an impermissible *post hoc* rationale in the form of elaborate but flawed probability calculations and comparisons neither considered nor relied upon by the NRC. In order to enforce its standards of meaningful judicial review of agency action and preserve the uniformity of its decisions, review by this Court is essential.

Accordingly, this Court should grant a writ of certiorari to review the *en banc* decision of the District of Columbia Circuit in this case.

I

THE SHARPLY DIVIDED *EN BANC* DECISION BELOW PRESENTS A QUESTION OF EXCEPTIONAL PUBLIC IMPORTANCE.

This petition seeks review of the 5-4 affirmance by the District of Columbia Circuit, sitting *en banc,* of the NRC's issuance of an operating license for the Diablo Canyon Nuclear Power Plant. It presents not only an issue recognized by the Court of Appeals as exceptionally important, but one on which the Court of Appeals was sharply divided in its ultimate decision on the merits. As such, this case is one in which this Court's review is particularly appropriate and necessary.[14]

The question presented focuses on emergency preparedness in the context of nuclear power plant licensing and operation — a subject recognized by the NRC through its regulations as "an *essential* aspect in the protection of the public health and safety."[15] To that end,

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[14]This Court has previously granted review by writ of certiorari under similar circumstances. *See, e.g., Rinaldi v. United States,* 434 U.S. 22, 25, 98 S.Ct. 81, 83 (1977) (reviewing 7-6 *en banc* decision); *Miree v. DeKalb County,* 433 U.S. 25, 28, 97 S.Ct. 2490, 2493 (1977) (reviewing 8-6 *en banc* decision); *Oil, Chemical & Atomic Workers Union v. Mobil Oil Corp.,* 426 U.S. 407, 412, 96 S.Ct. 2140, 2143 (1976) (reviewing 8-6 *en banc* decision); *see also* Fed. R. App. P. 35(a) (*en banc* review appropriate to resolve "a question of exceptional importance"); *Philadelphia Newspapers, Inc. v. Nuclear Regulatory Commission,* 727 F.2d 1195, 1203 (D.C. Cir. 1984) (noting "what is one of the most sensitive and difficult issues of our time: the safety of nuclear power"). As Stern and Gressman have noted, "where circuit judges sitting *en banc* are closely divided over an important issue, that factor may contribute to the Court's willingness to review the case." Stern & Gressman, *Supreme Court Practice* (5th ed. 1978), at 277.

[15]"Emergency Planning: Final Regulations," Preamble, 45 Fed. Reg. 55,402, 55,404 (August 19, 1980) (emphasis added). Emergency

following the failure of emergency response during the 1979 accident at the Three Mile Island Nuclear Power Plant ("TMI"),[16] the Commission substantially revised its emergency planning regulations to impose stringent planning requirements and to prohibit the licensing of a nuclear reactor in the absence of demonstrated assurance that the facility's onsite, state, and local emergency plans can be implemented. 10 C.F.R. § 50.47(a).[17] According to

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preparedness has been recognized by the District of Columbia Circuit as a "material" element in the licensing of every nuclear power plant. *Union of Concerned Scientists v. Nuclear Regulatory Commission,* 735 F.2d 1437, 1438-39 (D.C. Cir. 1984). As such, § 189(a) of the Atomic Energy Act mandates on-the-record public hearings regarding the adequacy of the subject facility's emergency plans prior to the Commission's licensing decision.

[16]The President's Commission found that "the [emergency offsite] response was dominated by an atmosphere of almost total confusion." Report of the President's Commission on the Accident at Three Mile Island, "The Need for Change: The Legacy of TMI" (October 30, 1979), at 17.

[17]10 C.F.R. § 50.47(a) provides that

> [n]o operating license for a nuclear power reactor will be issued unless a finding is made by NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. [C-2.]

Subsection (b) of 10 C.F.R. § 50.47 prescribes 16 emergency planning standards that emergency plans for nuclear reactors "must meet," and those standards are further defined by specific criteria in the Commission's official guidance, NUREG-0654, which is incorporated by reference in note 1 to 10 C.F.R. § 50.47(b). (C-3.) *See* note 18 *infra.*

The Commission's regulations are grounded in the Atomic Energy Act's fundamental mandate that a "definitive finding of safety" precede the licensing of all nuclear facilities, *Power Reactor Development Co. v. International Union of Electrical, Radio and Machine Workers, AFL-CIO,* 367 U.S. 396, 398, 81 S.Ct. 1529, 1530 (1961), and they implement specifically the Act's provision for regulations to "protect the public health and safety." *See, e.g.,* 42 U.S.C. § 2012(d)

the Commission's official guidance on implementation of the regulations, such planning must "take into account local offsite conditions that exist at the time of the emergency" and must include "[i]dentification of and means for dealing with potential impediments . . . to use of evacuation routes, and contingency measures."[18]

The Commission's revised emergency planning requirements were explicitly adopted in light of the Commission's recognition following the TMI accident that engineered design safeguards alone provide insufficient protection to the public and hence that emergency planning must be viewed as "equivalent to, rather than secondary to, siting and design in public protection."[19] On that basis, the revised regulations require emergency planning *independent* of the Commission's mandatory design requirements:

> The proposed rule is predicated on the Commission's considered judgment in the aftermath of the

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and(e) ("regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary . . . to protect the health and safety of the public"); 42 U.S.C. § 2133(d) ("no license may be issued . . . if . . . inimical . . . to the health and safety of the public"); *see also Consumers Power Co.* (Midland Plant), ALAB-315, NRC I-76-2, at 103-04 (1976) ("public safety is the first, last and a permanent consideration" in nuclear licensing decisions).

[18]"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654, II.D.4, II.J.10.k (November 1980), *referenced in* 10 C.F.R. § 50.47(b) and Part 50, Appendix E n.4. On the basis of these provisions, the Commission has required that adverse environmental conditions associated with a particular facility be addressed in its emergency planning reviews prior to licensing. *See* note 21 *infra*.

[19]Notice of Proposed Rulemaking, "Emergency Planning," Preamble, 44 Fed. Reg. 75,167, 75,169 (1979) (emphasis added).

> accident at Three Mile Island that safe siting and design-engineered features alone do not optimize protection of the public health and safety.
>
> * * *
>
> Emergency planning was conceived as a secondary but additional measure to be exercised in the unlikely event that an accident would happen. The Commission's perspective was severely altered by the unexpected sequences of events that occurred at Three Mile Island. *The accident showed clearly that the protection provided by siting and engineered safety features must be bolstered by the ability to take protective measures during the course of an accident.*[20]

Thus, notwithstanding the imposition of extraordinarily stringent seismic design safeguards at Diablo Canyon intended to prevent an accident caused by an earthquake on the Hosgri Fault — indeed, precisely *because* the conceded seismic risk at Diablo Canyon required those safeguards — the Commission's emergency preparedness

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[20] *Id.* The Kemeny Commission reached the same conclusion in its Report to the President on the accident at TMI:

> It is important to reiterate the fundamental philosophy we stated above: One must do everything possible to prevent accidents of this seriousness, but at the same time assume that such an accident may occur and be prepared for response to the resulting emergency.

Report of the President's Commission on the Accident at Three Mile Island, "The Need for Change: The Legacy of TMI," at 17; *see also* TMI-2 Lessons Learned Task Force, Final Report, NUREG-0585, at 2-7 ("[E]veryone connected with nuclear power technology must accept as a fact that unusual situations can occur and accidents can happen").

regulations require planning for the possibility that an earthquake-related accident could nonetheless occur.[21]

Remarkably, however, the risk of an earthquake was the very hazard for which the Commission deemed emergency planning unnecessary at Diablo Canyon and for which it strictly prohibited any evidentiary consideration under § 189(a) of the Atomic Energy Act. Over a vigorous dissent by NRC Commissioner Asselstine,[22] the Commission majority refused to require or even consider whether the emergency plans for Diablo Canyon will work in the event of a major earthquake. Instead, in direct contravention of the explicit purpose of its emergency planning regulations, the Commission ruled that, given Diablo Canyon's approved seismic design safeguards, the probability that an earthquake will cause an accident is too small to warrant consideration in the reactor's emergency plans. It did so, moreover, *despite* the Commission's conceded focus on seismic risk in the design of Diablo Canyon, *despite* the mandate of its emergency planning regulations that emergency planning is required independent of design safeguards, *despite* the references to earthquakes and other natural hazards in the NRC's own official guidance on implementation of those regulations, *despite* the Commission's consistent past application of those regulations to require consideration in other proceedings of low probability hazards, and *despite* the Commission's own technical staff's consideration of

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[21]Similarly, if other hazards pose particular risks to the public at other facilities, emergency planning for such hazards must consider them, and the NRC has so required in the case of volcanoes in the Pacific Northwest (Trojan), very heavy snowstorms in the Northeast (Shoreham, Limerick, Indian Point), and heavy fog and one hundred year flood (Diablo Canyon). *See* discussion by Wald, J., 789 F.2d at 53-57 (A-63-64).

[22]*See* discussion *supra* at 6-7.

earthquakes in their emergency planning reviews for California nuclear plants.

Characterizing the Commission's decision as "woefully inadequate as a piece of logical reasoning, lacking in record support, and patently inconsistent" with its regulations (789 F.2d at 46) (A-43-44), four members of the Court of Appeals sharply dissented from the Court's deferral to the Commission and its effective "nullification of emergency planning":

> The majority's opinion upholding the Commission's rationale *in toto* effectively nullifies emergency planning as an effort to predict what actions would be needed should an accident occur. Instead, under the majority's view, the Commission can avoid the public commitment it made in its regulations simply by declaring that the probability of any accident occurring is too low to bother with.

Id. at 46 (A-43). Although the Court of Appeals' majority sought to rationalize the Commission's decision by devising its own calculations of low probability, the dissent characterized those efforts as "deceptive," "a *post hoc* rationalization," and inconsistent with the explicit purpose of the regulations. *Id.* at 46, 48-50, 52 n.10 (A-43, 52, 56n.10). Simply stated, the dissenters concluded that the Commission's decision is "inexplicable in legal, logical or common sense terms":

> The NRC's absolute refusal to consider any evidence of complications caused by earthquakes which might cause or occur simultaneously with a radiological release at Diablo Canyon is inexplicable in legal, logical, or common sense terms. The Commission's decision is inconsistent with the terms of its own regulation and guidance document and with other interpretations of the same regulations. . . .

> It defies common sense to exclude evidence about the complicating effects of earthquakes from a proceeding dealing with how to respond to a nuclear accident at a plant located three miles from an active fault, a plant in which seismic concerns dominated the design and construction proceedings for well over a decade. The majority's preoccupation with probability calculations simply does not justify the Commission's stubborn refusal to do the obvious. The majority has allowed the Commission to interpret its regulations in a manner which undermines the basic purpose of emergency planning and singles out earthquakes for different treatment from other off-site natural phenomena, without giving any good reason for its neglect.

Id. at 60 (A-72-73).

Far from a mere procedural disagreement, this dispute concerns the wholesale nullification of the safeguard characterized by the Commission as "essential" to protection of the public in the event of a radiological emergency.[23] Under the circumstances, the decision of the sharply divided *en banc* Court below warrants this Court's plenary review, both to resolve an issue of recognized public importance and to effectuate the Atomic Energy Act's mandate of protection of the public health and safety. Accordingly, this petition for writ of certiorari should be granted.

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[23]Although the Commission's recognition of the safety significance of emergency planning arose out of the accident at TMI, the critical importance of comprehensive and workable emergency planning was graphically confirmed during the recent Chernobyl nuclear power plant disaster in the Soviet Union. Without a demonstrated capability for immediate emergency response and prompt public evacuation, the consequences to the public health and safety of a major nuclear accident may be catastrophic.

II

THE DECISION BELOW CONFLICTS WITH THE STANDARDS ESTABLISHED BY THIS COURT FOR JUDICIAL REVIEW OF ADMINISTRATIVE AGENCY DECISIONS.

The decision of the District of Columbia Circuit majority in this case conflicts with the standards long established by this Court for judicial review of administrative agency decisions. Rather than requiring the Commission to articulate and justify the factual and legal basis for its decision, the Court of Appeals majority disregarded the Commission's failure to provide a defensible factual basis for its action and instead created its own *post hoc* rationalization that was neither considered nor relied upon by the NRC.

In so doing, the Court of Appeals violated the fundamental rules of administrative law — as articulated repeatedly by this Court — that "an agency must cogently explain why it has exercised its discretion in a given manner," *Motor Vehicle Manufacturers Ass'n v. State Farm Mutual,* 463 U.S. 29, 48, 103 S.Ct. 2856, 2869 (1983); *Atchison, T & S.F. R. Co. v. Wichita Bd. of Trade,* 412 U.S. 800, 807, 93 S.Ct. 2367, 2374 (1973); *FTC v. Sperry & Hutchison Co.,* 405 U.S. 233, 248-49, 92 S.Ct. 898, 907 (1972); *NLRB v. Metropolitan Ins. Co.,* 380 U.S. 438, 442-44, 85 S.Ct. 1061, 1064 (1965), and that

> *a reviewing court,* in dealing with a determination or judgment which an administrative agency alone is authorized to make, *must judge the propriety of such action solely by the grounds invoked by the agency.* If those grounds are inadequate or improper, the court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis.

SEC v. Chenery Corp., 332 U.S. 194, 196, 67 S.Ct. 1575, 1577 (1947) ("*Chenery II*") (emphasis added); *accord Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 169, 83 S.Ct. 239, 246 (1962); *SEC v. Chenery Corp.*, 318 U.S. 80, 63 S.Ct. 454 (1943) ("*Chenery I*").[24] Relying on these principles in *Motor Vehicle Manufacturers Ass'n*, this Court reversed a decision of the National Highway Transportation Safety Administration where the agency — like the NRC in this case — had "failed to offer the rational connection between facts and judgment required to pass muster under the arbitrary and capricious standard." 463 U.S. at 56, 103 S.Ct. at 2873. In so doing, it emphasized once again that "it is the agency's responsibility, not this Court's, to explain its decision." *Id.* at 57, 103 S.Ct. at 2874.

These decisions are intended to ensure that agency action is based not on arbitrary, capricious, or impermissible reasoning or *post hoc* rationales, but on reasoned and defensible grounds actually considered and relied upon by the agency, consistent with its statutory or regulatory mandate:

> Expert discretion is the lifeblood of the administrative process, but "unless we make the requirements for administrative action strict and

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[24] *See also Motor Vehicle Manufacturers Ass'n v. State Farm Mutual*, 463 U.S. 29, 50, 103 S.Ct. 2856, 2870 ("agency's action must be upheld, if at all, on the basis articulated by the agency itself") *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519, 549, 98 S.Ct. 1197, 1214 (1978) ("[v]alidity of [agency] action must stand or fall on the propriety of that finding"); *Gulf States Utilities Co. v. Federal Power Commission*, 411 U.S. 747, 764, 93 S.Ct. 1870, 1880 (1973) (court may not "supply an alternative, unstated ground to support an agency's decision"); *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 419, 91 S.Ct. 814, 825 (1971) ("[*p*]*ost hoc* rationalizations . . . have traditionally been found to be an inadequate basis for review").

> demanding, expertise, the strength of modern government, can become a monster which rules with no practical limits on its discretion."

Motor Vehicle Manufacturers Ass'n, 463 U.S. at 48, 103 S.Ct. at 2869 (*quoting Burlington Truck Lines v. United States,* 371 U.S. at 167, 88 S.Ct. at 245) (emphasis omitted).

Neither the Commission majority's decision nor its affirmance by the sharply divided Court of Appeals can withstand analysis under these standards. Although the Commission asserts "low probability" as an ostensible justification for its action, its rationale is unsupported by factual evidence or legal analysis. Nonetheless, in order to salvage the Commission's decision, the Court of Appeals majority itself constructs a mathematic calculation of probabilities intended to support the conclusion that the earthquake danger on which the Diablo Canyon proceeding has focused for over a decade in design proceedings is too insignificant to warrant or permit any consideration in the context of emergency planning — in other words, that design safeguards, in and of themselves, are a sufficient protection for the public. Based on this quantitative analysis — never considered or relied upon by the Commission — the Court of Appeals majority affirms the Commission's decision.

As the four member dissent rightly notes, however, the majority's conclusion is unsound for several reasons. First,

> [t]he NRC has *totally defaulted* in providing any satisfactory explanation of why it interpreted the emergency planning regulations to exclude all consideration of earthquake complications in the emergency planning for a facility whose design

> proceedings centered on the plant's proximity to an active earthquake fault.

789 F.2d at 47 (A-46) (emphasis added). Far from "a rational connection between the facts found and the choice made," *Motor Vehicle Manufacturers Association*, 463 U.S. at 52, 103 S.Ct. at 2871, the Commission's conclusory assertion of low probability is based not on factual evidence, legal analysis, or a comparison of the relative probabilities of potential accident initiators or hazards, but on its purely intuitive conclusion that earthquakes are too improbable to consider — a conclusion thoroughly belied by Diablo Canyon's history of seismic safety concerns.

Second, the Court of Appeals' affirmance is premised on an impermissible *post hoc* rationalization of precisely the sort repeatedly condemned by this Court:

> *The Commission never quantified the probabilities involved in the manner suggested by the majority. . . .* Indeed, it seems odd to infer that the Commission performed such a quantitative, probabilistic analysis when its discussion of the occurrence rates of natural hazards was wholly qualitative and never considered the probability of an accident occurring at all. To the extent the NRC did not in fact rely on this quantitative rationale, the majority advances without warrant a post-hoc rationalization for the agency's decision.

789 F.2d at 52 n.10 (A-56n.10) (emphasis added). Because the majority's quantitative probability analysis has no predicate in the decision of the NRC being challenged, *a fortiori* the Commission's decision did not rest on that basis, and the "court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis." *SEC v. Chenery Corp.*, 332 U.S. at 196, 67 S.Ct. at 1577.

Third, even apart from this conflict with the *Chenery* doctrine, the majority's rationale fails to provide a defensible basis for the Commission's action, because the Court's reliance on probabilities to justify the failure to plan for an earthquake-related accident at Diablo Canyon is both inconsistent with the fundamental purpose of the regulations and misleading in the calculations used. In relying on the plant's approved seismic design to conclude that the likelihood that an earthquake will *cause* a nuclear accident "is so small as to be rated zero" (789 F.2d at 38) (A-26), the Court majority ignores the very premise on which the regulations were promulgated: "that, despite application of stringent safety measures, a serious nuclear accident may occur." *Southern California Edison Co.*, 17 NRC 528, 533 (1983).[25] Thus, as noted by the dissent:

> The NRC cannot now, consistently with the stated purpose of its regulations, interpret those regulations to exclude altogether consideration of accidents initiated by earthquakes *solely* on the ground that Diablo Canyon's design makes such accidents highly improbable.

789 F.2d at 49 (A-50). In nonetheless affirming the Commission based solely on the plant's seismic design, the Court majority violates its own prior proscription against relying on "an assumption [not] properly indulged in an emergency preparedness regulation." *GUARD v. Nuclear Regulatory Commission,* 753 F.2d 1144, 1149-50 (D.C. Cir. 1985).[26]

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[25] *See* discussion *supra* at 14-16.

[26] The Court also violates its related holding in *GUARD* that the Commission "may not . . . interpret [its emergency planning regulations] as meaning something other than what those words, in the

Moreover, the extensive probability calculations themselves, constructed by the majority to establish that an earthquake-related accident is too improbable to consider, are misleading in that they fail even to address the risk of greatest concern at Diablo Canyon — that an earthquake will *cause* an accident.[27] Instead, the majority focuses solely on the potential *simultaneous but independent* occurrence of an earthquake and an accident, implying thereby that, for all practical purposes, earthquake complications on emergency response simply cannot happen. As the dissent correctly notes, however, such analysis not only ignores the far greater risk associated with seismically-initiated accidents, but the critical fact that, if applied to any other natural hazard for which the Commission has required emergency planning, the majority's analysis would necessarily yield similarly low probabilities; consequently, the majority simply "invites the continuing erosion of emergency planning standards":

> By endorsing the NRC's consideration of design adequacy and radiological accident probabilities in emergency planning, the majority invites the continuing erosion of the emergency planning standards. *Little is left for the NRC to plan for once it elimininates from consideration not only initiating events the plant has been designed to withstand but any complicating*

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context of a nuclear power plant emergency planning standard, may rationally convey." 753 F.2d at 1146.

[27]Significantly, the majority devotes only one page of its opinion to the probability that an earthquake might cause an accident at Diablo Canyon. 789 F.2d at 37-38 (A-25-26). Its conclusion that Diablo Canyon's approved seismic design renders the probability of such an event essentially "zero" is totally unsupported, violates the fundamental planning principle that design safeguards can and do fail, and ignores the occurrence of serious accidents at such plants as TMI, Browns Ferry, Ginna, Salem, and Davis Besse — all of which received design approvals from the NRC.

> *event with a low probability of occurrence after it has been multiplied by a factor of 0.00001 to reflect the 1 in 100,000 chance of a radiological accident occurring in the first place.* These exceptions will easily swallow the whole of the plan.

789 F.2d at 50 (emphasis added) (A-51).

The majority decision below cannot be reconciled with the standards for agency action and review of such action long established by this Court. In order to remedy that conflict, therefore, the requested writ of certiorari should issue.

CONCLUSION

Diablo Canyon presents the almost incredible irony of a nuclear power plant, mistakenly sited less than three miles from a major earthquake fault, whose emergency plans have been approved by the Commission without allowing consideration of whether those plans will work in the event of an earthquake causing or accompanying a radiological emergency at the facility. This glaring omission in planning at a facility delayed for over a decade by seismic safety concerns is the result not simply of the Commission's failure to require such consideration, but of the Commission's *affirmative exclusion* of the issue from the licensing proceeding. By its affirmance of that decision, the District of Columbia Circuit holds that the Commission may rationally determine by regulation that design safeguards *and* emergency planning are essential to protect the public and then, in the context of the Diablo Canyon licensing proceeding, refuse even to consider emergency planning for the single most important hazard associated with the facility throughout its history. Such inconsistency should not be condoned by this Court.

Nor is its rationality enhanced by the Commission's new found, but unsupported confidence that the occurrence of such hazard has too low a probability even to permit its consideration. Seismic danger has been inextricably associated with Diablo Canyon since the Hosgri Fault was discovered within three miles of the plant's site. Conceded to be active, conceded to pose a risk of an earthquake of major proportions (M7.5 on the Richter Scale), the Hosgri Fault led to extensive redesigns of the plant from 1974 through 1984 — first, to backfit the plant to compensate for the increase in potential forces and, second, to redesign the facility once again upon the discovery in 1981 of thousands of flaws in the plant's seismic-related components. Given this history, the Commission simply invites disbelief by concluding that an earthquake-related accident cannot occur at Diablo Canyon.

Public confidence in the safety of Diablo Canyon and the integrity of the NRC's licensing process require that petitioners and the public be assured that, consistent with the NRC's duly promulgated emergency planning standards, Diablo Canyon's emergency plans will work in the event of an accident caused by an earthquake on the adjacent Hosgri Fault. Because petitioners have been denied any opportunity even to be heard on that issue — first by a divided Commission and second by the divided Court of Appeals — this Court's review is essential.

For the foregoing reasons, petitioners respectfully submit that the petition for a writ of certiorari to the District of Columbia Circuit should be granted.

Respectfully submitted,

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APPENDIX A

Notice: This opinion is subject to formal revision before publication in the Federal Reporter or U.S.App.D.C. Reports. Users are requested to notify the Clerk of any formal errors in order that corrections may be made before the bound volumes go to press.

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 84-1410

SAN LUIS OBISPO MOTHERS FOR PEACE;
SCENIC SHORELINE PRESERVATION CONFERENCE, INC.;
ECOLOGY ACTION CLUB; SANDRA SILVER;
GORDON SILVER; ELIZABETH APFELBERG;
and JOHN J. FORSTER, PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION
and UNITED STATES OF AMERICA, RESPONDENTS

PACIFIC GAS AND ELECTRIC COMPANY, INTERVENOR

No. 81-2034

GEORGE DEUKMEJIAN,
GOVERNOR OF THE STATE OF CALIFORNIA, PETITIONER

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION
and UNITED STATES OF AMERICA, RESPONDENTS

PACIFIC GAS AND ELECTRIC COMPANY, INTERVENOR

Bills of costs must be filed within 14 days after entry of judgment. The court looks with disfavor upon motions to file bills of costs out of time.

No. 81-2035

SAN LUIS OBISPO MOTHERS FOR PEACE, ET AL., PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION and UNITED STATES OF AMERICA, RESPONDENTS

PACIFIC GAS AND ELECTRIC COMPANY, INTERVENOR

No. 83-1073

SAN LUIS OBISPO MOTHERS FOR PEACE, ET AL., PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION and UNITED STATES OF AMERICA, RESPONDENTS

PACIFIC GAS AND ELECTRIC COMPANY, INTERVENOR

No. 84-1042

SAN LUIS OBISPO MOTHERS FOR PEACE, ET AL., PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION and UNITED STATES OF AMERICA, RESPONDENTS

PACIFIC GAS AND ELECTRIC COMPANY, INTERVENOR

Petitions for Review of an Order of the Nuclear Regulatory Commission

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Argued October 3, 1985

Decided April 25, 1986

Joel R. Reynolds for petitioners, San Luis Obispo Mothers for Peace, et al. in Nos. 84-1410, 81-2034, 81-2035, 83-1073 and 84-1042. *David S. Fleschaker* entered an appearance for petitioners in Nos. 81-2035, 83-1073 and 84-1042. *Herbert H. Brown, Charles Lee Eisen* and *Lawrence Coe Lanpher* entered appearances for petitioner in No. 81-2034.

William H. Briggs, Jr., Solicitor, Nuclear Regulatory Commission, with whom *Herzel H.E. Plaine*, General Counsel, *E. Leo Slaggie*, Deputy Solicitor, Nuclear Regulatory Commission, *Peter R. Steenland, Jr., Jacques B. Gelin*, Attorneys, Department of Justice, *Richard L. Black, Sheldon L. Trubatch, E. Neil Jensen, Carole F. Kagen, A. Laurence Ralph*, and *Lawrence J. Chandler*, Attorneys, Nuclear Regulatory Commission were on the brief for respondents in Nos. 84-1410, 81-2034, 81-2035, 83-1073 and 84-1042. *Mark E. Chopko* and *Richard A. Parrish*, Attorneys, Nuclear Regulatory Commission entered appearances for respondents in Nos. 81-2034, 81-2035 and 83-1073.

William T. Coleman, Jr., with whom *Aaron S. Bayer, Malcolm H. Furbush, Douglas A. Oglesby, Joseph B. Knotts, Jr., Scott M. DuBoff* and *Daniel F. Stenger* were on the brief for intervenor, Pacific Gas and Electric Company in Nos 84-1410, 81-2034, 81-2035, 83-1073 and 84-1042. *F. Ronald Laupheimer* entered an appearance for intervenor in Nos. 81-2034 and 81-2035. *J. Michael McGarry, III* entered an appearance for intervenor in Nos. 81-2034 and 83-1073.

Barton Z. Cowan entered an appearance for *amicus curiae*, Atomic Industrial Forum, Inc., in No. 84-1410.

Peter B. Kelsey, Edward H. Comer and *William L. Fank* entered appearances for *amicus curiae*, Edison Electric Institute, in No. 84-1410.

Before: ROBINSON, *Chief Judge*, WRIGHT, WALD, MIKVA, EDWARDS, GINSBURG, BORK, SCALIA and STARR, *Circuit Judges*.

Opinion for the Court filed by *Circuit Judge* BORK.

Concurring opinion filed by *Circuit Judge* MIKVA, concurring in Parts I and II of *Judge* BORK's opinion and in the result reached by Part III.

Dissenting opinion filed by *Circuit Judge* WALD, in which *Chief Judge* ROBINSON and *Circuit Judges* WRIGHT and GINSBURG concur.

BORK, *Circuit Judge*: This case presents two questions. The first is whether the Nuclear Regulatory Commission ("NRC" or "Commission"), before issuing a license for the operation of the Diablo Canyon Nuclear Power Plant, is required to hold a hearing concerning the potential complicating effects of an earthquake on responses to a simultaneous but independently caused radiological accident at the plant. The risk of that happening is calculated as being one in several tens of millions. The second question is whether this court should examine transcripts, not a part of the record, of a closed meeting of the Commission.

In *San Luis Obispo Mothers for Peace* v. *NRC*, 751 F.2d 1287 (D.C. Cir. 1984), a panel of this court affirmed a decision by the NRC to allow issuance of low power and full power licenses for the Diablo Canyon plant. In so doing, the panel majority considered and rejected petitioners' claim that the Commission improperly excluded from licensing hearings specific consideration of the potential complicating effects of an earthquake on planned emergency responses at the Diablo Canyon facility. The same majority refused to examine the proffered transcripts. *See id.* at 1323-29. Subse-

quently, the full court vacated a portion of the original opinion and judgment and granted rehearing *en banc* to consider the questions more fully. *See* 760 F.2d 1320. We now affirm the Commission's decision.

I.

Licensing proceedings for nuclear power plants are typically long and complex and the Diablo Canyon proceedings were no exception. In this section, we set forth only a skeletal history of those proceedings, taken largely from the panel opinion. *See* 751 F.2d at 1296-97. Additional facts relevant to the specific issues we consider are set forth throughout the opinion.

The petitioners in this case consist of a number of individuals who, and groups whose members, live and work near the Diablo Canyon plant. They have been active in the Commission's proceedings related to the licensing of the plant.

The Atomic Energy Commission ("AEC"), the predecessor to the NRC, issued construction permits to the Pacific Gas and Electric Company ("PG & E") for Units 1 and 2 of the pressurized water reactor plant at Diablo Canyon in 1968 and 1970. *See* Docket No. 50-323, 4 A.E.C. 447, 460 (1970), *aff'd*, ALAB-27, 4 A.E.C. 652, 664 (1971) (Unit 2); Docket No. 50-275, 4 A.E.C. 89, 98-99 (1968) (Unit 1). Construction began shortly thereafter, based on the assumption that the nearest significant earthquake fault was eighteen to twenty miles away. *See* ALAB-519, 9 N.R.C. 42, 45 (1979). Four years later, offshore exploration for petroleum revealed the presence of the Hosgri Fault within three miles of the Diablo Canyon site. *See id.* Petitioners, who had intervened in the administrative proceedings, requested that construction at the facility be stopped until the implications of the discovery could be assessed, but the AEC permitted construction at the plant to continue. *See* 4 A.E.C. 914 (1972). Following an extensive reex-

amination, the Commission's Appeal Board approved the plant's seismic design on June 16, 1981. ALAB-644, 13 N.R.C. 903 (1981).

On September 21, 1981, the Commission rejected claims that the emergency planning program at Diablo Canyon was deficient and issued a license to PG & E to load fuel and conduct low power testing at Unit 1. *See* CLI-81-22, 14 N.R.C. 598 (1981). Investigation by PG & E and the Commission's staff, however, soon uncovered various design errors, *see* CLI-81-30, 14 N.R.C. 950, 951 (1981), and on November 19, 1981, the Commission suspended PG & E fuel loading and low power test license. *Id.* at 950. To ensure that the plant would be adequately protected against seismic disturbances, the Commission ordered PG & E, as a condition of reinstatement of the license, to institute an independent design verification program. *See id.* at 951, 955-58. In addition, several requirements concerning seismic and other design verification issues were imposed on PG&E as conditions of its eligibility for a full power license. *See* CLI-84-13, 20 N.R.C. 267 (1984).

Professionals expended more than 2,000,000 hours on the reanalysis and modification of the plant's design, which were completed in October 1983. CLI-84-5, 19 N.R.C. 953, 971 (1984) (views of Commissioner Bernthal). The NRC staff undertook an independent review of the results of the Independent Design Verification Program after which the Commission progressively reinstated elements of the suspended low power license in late 1983 and early 1984. *See* CLI-84-5, 19 N.R.C. 953 (1984); CLI-84-2, 19 N.R.C. 3 (1984); CLI-83-27, 18 N.R.C. 1146 (1983). Reinstatement of the license was consistent with the Appeal Board's findings that "[t]he applicant's verification efforts provide adequate confidence that the Unit 1 safety-related structures, systems and components are designed to perform satisfactorily in service and that any significant design deficiencies in that

facility resulting from the defects in the applicant's design quality assurance program have been remedied." ALAB-763, 19 N.R.C. 571, 619 (1984).

On August 10, 1984, the NRC approved issuance of a full power license for the Diablo Canyon plant. CLI-84-13, 20 N.R.C. 267 (1984). Petitioners appealed both the low power and full power orders to this court and, before the license had issued, the court granted petitioners' motion for a stay. On October 31, 1984, after oral argument, the court lifted the stay, thereby permitting issuance of the full power license and the commencement of operations at Diablo Canyon. On December 31, 1984, the court affirmed the Commission's decision to permit issuance of the low power and full power licenses. *See San Luis Obispo Mothers for Peace* v. *NRC*, 751 F.2d 1287 (D.C. Cir. 1984). The court found that the Commission made two legal errors (not related to the issues considered in this *en banc* proceeding), but that neither warranted judicial relief since one was harmless and the other had already been remedied by the Commission. *See id.* at 1311-12.

Specifically with regard to emergency planning, the panel majority held that the Commission did not err by excluding consideration of the effects of earthquakes on emergency responses at Diablo Canyon. In addition, the majority denied petitioners' motion to supplement the administrative record with the transcripts of a closed meeting of the NRC. *See* 751 F.2d at 1323-29. Judge Wald, dissenting in part, thought that the Commission's exclusion of consideration of earthquakes was arbitrary and capricious and that the court should make an *in camera* inspection of the transcripts in deciding whether to grant petitioners' motion to supplement the record. 751 F.2d at 1329-35.

II.

Petitioners argue that the Commission's decision to exclude from the Diablo Canyon licensing proceedings con-

sideration of the potential complicating effects of an earthquake on emergency responses "has deprived Petitioners of their right to an on-the-record hearing on a material safety issue . . . in violation of § 189(a) of the Atomic Energy Act as applied by this Court in *Union of Concerned Scientists* v. [*NRC*, 735 F.2d 1437 (1984), *cert. denied*, 105 S. Ct. 815 (1985)]." Supplemental Brief for Petitioners on Rehearing En Banc ("Pet. Supp. Br.") at 11 (citations omitted).

Section 189(a)(1) of the Atomic Energy Act provides that "[i]n any proceeding under this chapter, for the granting . . . of any license . . ., the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding." 42 U.S.C. § 2239(a)(1) (1982). It follows from *Union of Concerned Scientists*, however, that the "interest" which entitles a person to a hearing is defined by the Comission's rules and regulations. In that case, we invalidated an NRC amendment to its rule on emergency preparedness. The amendment eliminated the requirement of a hearing on the results of emergency preparedness exercises as a prerequisite to authorization of a license. But those results remained a factor that the Commission was required to consider in its licensing decision. "Since the NRC, by its own regulations, has made correction of deficiencies identified in emergency exercises a requirement of its ultimate licensing decision, it would seem to follow that results of these exercises must be subject to the § 189(a) hearing requirement." 735 F.2d at 1442; *accord id.* at 1445.

Union of Concerned Scientists holds only that the Commission cannot exclude from a section 189(a) hearing issues that its rules of regulations require it to consider in its licensing decisions. As the opinion stated: "Today, we in no way restrict the Commission's authority to [limit the purposes for which it considers emergency exercises relevant] as a substantive licensing standard."

735 F.2d at 1448 (footnote omitted). Thus, to establish, on the rationale of *Union of Concerned Scientists*, that the Commission in this case impermissibly refused a hearing, petitioners must show that NRC rules or regulations required the Commission to consider the potential complicating effects of earthquakes on emergency responses in deciding whether to license Diablo Canyon. Petitioners have made no such showing.

Petitioners assert that "the Commission's interpretation and application of its own regulations are entitled to no weight," Pet. Supp. Br. at 20, because "the Commission's conclusion is undermined both by the language and prior application of the NRC's regulations," Pet. Supp. Br. at 12, and also because " 'the Commission's outright refusal to make explicit provision in emergency response plans for an earthquake in a nuclear plant within three miles of a major, active fault in California is by definition an arbitrary and capricious act,' " Pet. Reply Br. at 3 (*quoting* 751 F.2d at 1335 (Wald, J., dissenting)); *see also* Pet. Supp. Br. at 15-21. We think these contentions do not survive analysis.

A.

We consider first the question whether the Commission's regulation requires consideration of earthquakes and thereby triggers section 189(a)'s hearing requirement.

1. *The Commission's interpretation of the regulation.* We note at the outset that courts are not at liberty to set aside an agency's interpretation of its own regulations unless that interpretation is plainly inconsistent with the language of the regulations. *See United States* v. *Larionoff*, 431 U.S. 864, 872-73 (1977); *National Association of Regulatory Utility Commissioners* v. *FCC*, 746 F.2d 1492, 1502 (D.C. Cir. 1984). The degree of defer-

ence due is great.[1] We "need not find that the agency's construction is the only possible one, or even the one that the court would have adopted in the first instance." *Belco Petroleum Corp.* v. *FERC*, 589 F.2d 680, 685 (D.C. Cir. 1978). As stated by the Supreme Court:

> Since this involves an interpretation of an administrative regulation a court must necessarily look to the administrative construction of the regulation if the meaning of the words used is in doubt. . . . [T]he ultimate criterion is the administrative interpretation, which becomes of controlling weight unless it is plainly erroneous or inconsistent with the regulation.

Bowles v. *Seminole Rock Co.*, 325 U.S. 410, 413-14 (1945).

The only NRC regulation relevant to this case is the regulation dealing with emergency planning. Promulgated in 1980 following the accident at Three Mile Island, that regulation provides in pertinent part that "no operating license for a nuclear power reactor will be issued unless a finding is made by NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 C.F.R. § 50.47(a)(1) (1984). Though that regulation represents a departure from the Commission's previous policy of requiring little or no emergency planning, the Commission has consistently interpreted that regulation not to require specific consideration of the potential complicating effects of earthquakes. *See Pacific Gas & Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 & 2)*, CLI-84-12, 20 N.R.C. 249 (1984); *Southern Cali-*

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[1] Courts show deference to an agency's interpretation of its governing statute. "When the construction of an administrative regulation rather than a statute is in issue, deference is even more clearly in order." Udall v. Tallman, 380 U.S. 1, 16 (1965).

fornia Edison Co. (San Onofre Nuclear Generating Station, Units 2 & 3), CLI-81-33, 14 N.R.C. 1091 (1981).

Petitioners' claim that the Commission's interpretation contradicts the language of the emergency planning regulation is supported only by a quotation of the regulatory language. That language, however, does not contradict, but amply supports, the Commission.

The regulation does not address any particular emergency or natural hazard; rather, it sets forth a general standard that envisions judgment and implies discretion: the Commission is to satisfy itself that there is "reasonable assurance" of "adequate" protective measures. In this case, we think that the Commission's view —that it need not consider the potential effects of earthquakes to determine "that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency"—is not, by any stretch of the imagination, "plainly inconsistent" with the regulatory language.[2]

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[2] Nevertheless, the dissent insists that the Commission's interpretation of its emergency planning regulation is entitled to no weight because it "is inconsistent with the fundamental purposes of those regulations." Dissent at 5. This requirement is found nowhere in the controlling Supreme Court precedent and we decline to adopt it here. Given the dissent's view of the regulation's purpose—to plan for the unexpected—any Commission interpretation that declines to require consideration of any particular occurrence, no matter how improbable, would be invalid. The dissent repeatedly stresses that the Diablo Canyon plant is "located only three miles from an active geological fault." Dissent at 32; *see id.* at 31. But under the dissent's own approach, a plant's proximity to a fault is irrelevant. Every plant must plan for the disrupting effects of an earthquake regardless of the likelihood that one will actually occur.

Even the dissent, however, stops short of following its analysis to its logical conclusion. For example, at one point it states:

Petitioners assert, however, that the Commission's interpretation is "undermined" by an NRC staff report referred to in the emergency planning regulation. Subsection (b) of the regulation sets forth sixteen specific standards which the onsite and offsite emergency response plans for nuclear power reactors must meet. A footnote to subsection (b) states: "These standards are addressed by specific criteria in NUREG-0654; FEMA-REP-1 entitled 'Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants—for Interim Use and Comment', January 1980." 10 C.F.R. § 50.47 (b) n.1 (1984). NUREG-0654 was a joint project of the NRC and FEMA staffs "to provide a common guidance and reference source for . . . State and local governments and nuclear facility operators in the development of radiological emergency response plans and pre-

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> [T]he Commission can . . . exclude from consideration [initiating or complicating events] with such low probabilities that they would not warrant prudent risk reduction methods. . . . While drawing the line between probabilities will sometimes prove difficult, the Commission clearly does not have to consider an event as unlikely as an earthquake greater than the 7.5 magnitude SSE for Diablo Canyon.

Dissent at 11 n.7 (citations omitted). In this the dissent is obviously correct. But once the dissent concedes that there exist some contingencies which the Commission is *not* required to consider, it cannot at the same time maintain that the Commission's refusal to consider an occurrence because of its improbability conflicts with the purpose of the regulation. It follows that the Commission is left with a comparison of relative probabilities—a matter of line drawing. In this circumstance, we think the only inquiry open to us is whether the Commission's decision that the regulation does not require consideration of earthquakes was rational. The dissent might wish to draw the line elsewhere, but, as will be shown, petitioners have not met their burden of demonstrating that the Commission's decision was irrational.

paredness in support of nuclear power plants." NUREG-0654 at 1.

We do not think NUREG-0654 undermines the Commission's interpretation of its emergency planning regulation. Petitioners state that NUREG-0654 contains "general references to 'natural hazards.'" Pet. Supp. Br. at 13. But we can find no reference, general or specific, to "natural hazards" in the body of the document. Petitioners quote two statements from the report in support of their assertion. The first is that "[e]ach State and local organization should have procedures in place that provide for emergency actions to be taken which are consistent with the emergency actions recommended by the nuclear facility licensee, taking into account local offsite conditions that exist at the time of the emergency." NUREG-0654 at 42. The second statement is that "[t]he organization's plans to implement protective measures for the plume exposure pathway shall include . . .[i]dentification of and means for dealing with potential impediments (e.g., seasonal impassability of roads) to use of evacuation routes, and contingency measures." NUREG-0654 at 61-63. Petitioners' argument is that these sentences constitute "references to 'natural hazards'" and that the Commission is therefore required to consider the effects of earthquakes on emergency planning. This argument is unsound.

It is not at all clear that the phrases, "local offsite conditions" and "potential impediments . . . to evacuation routes," were intended to suggest specific consideration of all conceivable "natural hazards." Taken in context, these phrases constitute broad references. They might suggest some consideration of natural phenomena reasonably anticipated at the plant such as seasonal rains, fog, or "seasonal impassibility of roads." But petitioners' reading of these references to require specific consideration of such highly unlikely and infrequent events as an earthquake at the plant sweeps much too

broadly. If we accept petitioners' argument, we can think of no potential natural or unnatural hazards, regardless of their improbability, that the Commission would not be required to consider. That is a prescription for licensing proceedings that never end and plants that never generate electricity. Petitioners themselves attempt to disavow that logical conclusion of their argument. For example, at oral argument petitioners conceded that the emergency planning regulations (and presumably NUREG-0654) do not require the Commission to consider the potential complicating effects of a meteorite striking the plant. Yet we do not see why NUREG-0654 would not require just such consideration given a holding that it requires consideration of potential simultaneous earthquakes and independently caused radiological accidents at the plant. As we will show, the latter is not significantly more likely than the former.

Moreover, our conclusion that NUREG-0654 does not counsel specific consideration of earthquakes is more in keeping with NUREG-0654's stated policy that "[n]o single specific accident sequence should be isolated as the one for which to plan because each accident should have different consequences, both in nature and degree," NUREG-0654 at 6, than is petitioners' contrary assertion.

Petitioners also claim that a reference to earthquakes in NUREG-0654's appendix undercuts the Commission's interpretation of the applicable regulations. *See* Pet. Supp. Br. at 13. The appendix contains a list of "example initiating conditions" that could lead to a "site area emergency" that includes: "Severe natural phenomena being experienced or projected with plant not in cold shutdown." NUREG-0654 app. 1 at 1-13. It is to be noted that this example refers to an earthquake that causes a radiological emergency, not an earthquake that complicates emergency responses. The former risk, to which the example pertains, was the subject of extensive hearings and is not under review here. Under

this example is listed: "Earthquake greater than SSE levels." *Id.* "[T]he SSE is the most powerful earthquake ever expected to occur at the plant site." ALAB-644, 13 N.R.C. 903, 911 (1981). For Diablo Canyon, the SSE was calculated to be an earthquake of 7.5 magnitude. *Id.* at 910. Far from being "projected" for the Diablo Canyon, an earthquake greater than SSE levels, by definition, is *never* expected to occur at the plant site. Indeed, the Commission has noted that the probability that an earthquake *at the SSE level* will occur has "typically been estimated to be on the order of one in a thousand or one in ten thousand per year." CLI-84-4, 19 N.R.C. 937, 948 (1984). Evidence before the Licensing Board indicated that "there have not been recurrent earthquakes above 6.5 magnitude on the Hosgri in the past 17,000 years." LBP-79-26, 10 N.R.C. 453, 482 (1979). The fact is particularly significant because the Hosgri is 90 miles long, *see id.* at 472, and only a small portion of it is near the Diablo Canyon plant. As the panel majority stated in a portion of its opinion not vacated by our May 1, 1985 Order: "We must assume, therefore, that the likelihood that an earthquake will trigger a nuclear accident at the facility is so small as to be rated zero." 751 F.2d at 1304 (footnote omitted).

Moreover, even if we agreed with petitioners' claim that NUREG-0654, in its body or appendix, suggests consideration of earthquakes, the emergency planning regulations' reference to NUREG-0654 makes plain that it is a *staff* document intended simply to provide *guidance* to parties in complying with the standards set forth in the emergency planning regulations: "NRC staff has developed . . . a joint NRC/FEMA report, NUREG-0654 . . . to provide guidance in developing plans for coping with emergencies." 10 C.F.R. Part 50 app. E n.1 (1984). Under the regulations, the Commission is required to make its own finding that emergency plans "provide reasonable assurance" of "adequate protective measures"

and meet the specified regulatory standards. *See* 10 C.F.R. § 50.47(a)(1) & (b) (1984). These regulatory standards contain no references to "natural hazards," to say nothing of earthquakes. To accept petitioners' argument, therefore, we would have to hold that NUREG-0654, a staff document intended as guidance, supersedes the regulation itself. The only virtue of that approach is novelty.[3]

2. *The Commission's applications of the regulation.* Petitioners' next argument is that the Commission's interpretation conflicts with "prior application of the NRC's regulations." If petitioners suggest an inconsistency with prior Commission applications, their assertion is false. The Commission has never applied its regulation in any way except the way it did here. Indeed petitioners' only support for their claim is apparently that the Commission's *staff* has called for emergency plans to consider the potential complicating effects of earthquakes. The position of an agency's staff, taken before the agency itself decided the point, does not invalidate the agency's subsequent application and interpretation of its own regulation.

The facts are as follows. In December, 1980, a member of the NRC's staff sent PG & E a letter requesting that it evaluate "the potential complicating factors which might be caused by earthquakes which either initiate or follow the initiation of accidents," Record, vol. 69, exh. 117 (Letter from Tedesco (NRC) to Furbush (PG & E) (Dec. 16, 1980)). *See* Pet. Supp. Br. at 5, 13. A staff member wrote a memorandum on November 3, 1980 requesting that the Federal Emergency Management Agency review the adequacy of state and local capabilities

[3] Our conclusion is buttressed by the fact that the emergency planning regulation cites a preliminary version of NUREG-0654 "for Interim Use and Comment," issued in January 1980 before the regulation itself was adopted in August 1980. *See* 10 C.F.R. § 50.47(b) n.1 (1984).

for emergency response to a radiological accident occurring during an earthquake. *See* Pet. Supp. Br. at 5-6 (*citing* Record, vol. 69, attachment to exh. 117 (Memorandum from Grimes (NRC) to McConnell (FEMA) (Nov. 3, 1980))). Petitioners ignore the fact that both of these documents were written *before* the Commission itself had interpreted its emergency planning regulation.

The regulation was promulgated in 1980 and the question whether it required consideration of earthquakes first came before the Commission in 1981, after it was raised by the Atomic Safety and Licensing Board in the context of licensing the San Onofre Nuclear Generating Station. The Commission decided "that its current regulations do not require consideration of the impacts on emergency planning of earthquakes which cause or occur during an accidental radiological release." *San Onofre*, CLI-81-33, 14 N.R.C. at 1091.[4] In so interpreting its regulation, the Commission stated:

> A review of the rulemaking file associated with the Commission's emergency planning regulations reveals that . . . [t]hree commenters suggested that the NRC specifically require the occurrence of earthquakes or severe natural phenomena to be part of the basis for emergency response planning, but the comments were not accepted in the final rule. The current regulations are designed with the flexibility to accommodate a range of onsite accidents, including accidents that may be caused by severe earth-

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[4] The Commission noted, however, that it "will consider on a generic basis whether regulations should be changed to address the potential impacts of a severe earthquake on emergency planning." *San Onofre*, 14 N.R.C. at 1092. On the basis of this consideration, the Commission decided that the regulations should not be amended to require consideration of earthquakes and has proposed instead a rule providing explicitly that earthquakes need not be considered in emergency planning. *See* 49 Fed. Reg. 49,640 (1984).

> quakes. This does not, however, mean that emergency plans should be tailored to accommodate specific accident sequences . . . .

San Onofre, CLI-81-33, 14 N.R.C. at 1092 (citations omitted). Thus, the 1980 staff documents on which petitioner rely in no way affect the legitimacy of the Commission's subsequent decision not to require consideration of earthquakes on emergency planning at Diablo Canyon. The positions of an agency's staff do not preclude the agency from subsequently reaching its own conclusion.

The *San Onofre* rule has been followed since. The Appeal Board relied explicitly on *San Onofre* to reject a challenge to the Licensing Board's authorization of low power testing at Diablo Canyon on the ground that it should have required consideration of earthquakes in emergency planning. *See* ALAB-728, 17 N.R.C. 777, 792-93 (1983), *aff'g* LBP-81-21, 14 N.R.C. 107 (1981). The Commission itself then summarily declined review. *See* CLI-83-32, 18 N.R.C. 1309 (1983).

Prompted in part by two staff memoranda, the Commission in 1984 decided to consider whether "the circumstances of [the Diablo Canyon] case . . . provide a basis for departure from its decision in" *San Onofre*. *See Diablo Canyon*, CLI-84-12, 20 N.R.C. at 249. Specifically, the Commission requested that petitioners, PG & E and the NRC staff submit comments addressing "whether NRC emergency planning regulations can and should be read to require some review of the complicating effects of earthquakes on emergency planning for Diablo Canyon." CLI-84-4, 19 N.R.C. 937, 938 (1984). After receiving and considering these comments, the Commission reaffirmed its original interpretation "that the NRC's regulations 'do not require consideration of the impacts on emergency planning of earthquakes which cause or occur during an accidental radiological release.'" *Diablo Canyon*, CLI-84-12, 20 N.R.C. at 250 (*quoting San*

Onofre, CLI-81-33, 14 N.R.C. at 1091).[5] Thus, there can be no doubt that the NRC's position has not only been consistently applied by has been thoughtfully reconsidered in this very proceeding.

Petitioners cite the two staff memoranda just referred to for the proposition that "[s]ince 1980, the Commission's staff has frequently advocated the view that consideration of the effects of earthquakes on emergency planning 'may be warranted' for reactor sites in California because of their 'relatively high' seismic risk." Pet. Supp. Br. at 6 & n.15 (*citing* Memoranda of Jan. 13, 1984 and June 22, 1982, attachments 1 & 2 to CLI-84-4, 19 N.R.C. 937 (1984)). Petitioners support their assertion that the staff "frequently advocated" a view contrary to the Commission's with the following parenthetical: "('planning for earthquakes which might have emergency preparedness implications may be warranted in areas where the seismic risk to offsite structures is relatively high (*e.g.*, California sites . . .)')." Pet. Supp. Br. at 6 n.15. This is a single occasion, not a frequent event. Worse, the claim that it constitutes "advocacy" is completely misleading. Petitioners have taken the quoted language out of context.

The language in question comes from the January 13, 1984 memorandum. The memorandum first recounts the substance of the Commission's *San Onofre* decision and the Commission's statement that it would consider whether its regulations should be changed. The memorandum then states that the Commission's Secretary directed the staff to undertake such consideration and that the staff re-

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[5] The Commission in addition determined that petitioners made no showing of special circumstances within the meaning of 10 C.F.R. § 2.758 (1984) warranting a waiver of the regulations to permit consideration of the effects of earthquakes on emergency planning at Diablo Canyon. *See* CLI-84-12, 20 N.R.C. at 253-54.

sponded in a memorandum dated June 22, 1982. In a footnote, the memorandum then states:

> To very briefly summarize the Staff's position as expressed in its June 22nd response, the Staff concluded that the Commission's regulations do not require amendment since (1) for most sites there is only a very low likelihood that an earthquake severe enough to disturb onsite or offsite planned responses will occur concurrently with or cause a reactor accident, and (2) while planning for earthquakes which might have emergency preparedness implications may be warranted in areas where the seismic risk to offsite structures is relatively high (*e.g.*, California Sites and other areas of the Western U.S.), current review criteria set forth in NUREG-0654 (which are derived from the Commission's regulations in 10 C.F.R. § 50.47) are considered adequate.

Attachment 2 to CLI-84-4, 19 N.R.C. at 947 n.2.

Petitioners substantially mischaracterize the staff's views. The staff was summarizing its reasons for *rejecting* an amendment to the Commission's emergency planning regulations that would have required specific consideration of the effects of earthquakes on emergency planning. Similarly, since the staff was expressing its views about an *amendment* to the regulation and not the regulation itself, there can be no suggestion that the staff was expressing an opinion about the correctness of the Commission's interpretation of the existing regulation.[6] Moreover, since both memoranda were written after the Commission's *San Onofre* decision, the staff was well aware of the Commission's interpretation.

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[6] We note that even if petitioners were accurate in their assertion that the Commission's staff "frequently advocated" the view that emergency plans should consider the effects of earthquakes, the Commission would be under no obligation to accept the staff's view and either interpret or amend its regulations to require such consideration.

We have now reviewed the sum of petitioners' arguments and find disingenuous petitioners' assertion that the Commission's refusal to allow consideration of the effects of earthquakes on emergency responses for Diablo Canyon was "in disregard of its own technical staff's longstanding practice of considering earthquakes in their emergency planning reviews for California nuclear power plants." Pet. Supp. Br. at SA 3. By petitioners' own admission, "the earthquake risk affects only two nuclear plants, Diablo Canyon and San Onofre." *See* 751 F.2d at 1308; Opening Brief for Petitioner at 44-45. With respect to the licensing of the San Onofre plant, petitioners' claim that the NRC staff "considered earthquakes" is unsupported. Further, it appears inaccurate. In *San Onofre*, the Commission stated that the issue "whether emergency planning should be concerned with earthquakes" was "raised *sua sponte* by the Atomic Safety and Licensing Board." CLI-81-33, 14 N.R.C. at 1091. After concluding that its current regulations do not require consideration of earthquakes, the Commission "directed [the Licensing Board] not to pursue this issue." *Id.*

In the case of Diablo Canyon, it is true that the NRC staff requested PG & E to consider the effects of earthquakes in its emergency plans. But as already noted, this request came before the Commission's *San Onofre* decision. There is no indication that the staff persisted in requiring consideration of earthquakes in Diablo Canyon emergency plans after *San Onofre* was decided. Indeed, it seems unlikely that they would have done so given that the Commission's Appeal Board and then the Commission itself specifically rejected challenges to Diablo Canyon licenses on the ground that emergency plans failed to consider earthquakes. We do not believe that the one instance cited by petitioners constitutes a "longstanding practice."

3. *Consistency with Atomic Energy Act.* Though petitioners make only a cursory assertion that the Commis-

sion's interpretation of its emergency planning regulation contradicts the Atomic Energy Act, we consider this contention briefly since the Supreme Court has stated that "regulations, in order to be valid, must be consistent with the statute under which they are promulgated. *See United States* v. *Larionoff*, 431 U.S. 864, 873 (1977).

Enacted in 1946, the Atomic Energy Act provides that "[i]n the performance of its functions the Commission is authorized to . . . make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this chapter." 42 U.S.C. § 2201(p) (1982). This is a broad grant of authority. One of the stated purposes of the Act is to provide for "a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public." *Id.* § 2013(d).

Petitioners' argument must be that emergency planning regulations that do not specifically require consideration of earthquakes are inconsistent with "the health and safety of the public" as those terms are used in the Act. But this argument disappears when it is recalled that prior to 1980, there were *no* emergency planning regulations at all. Apparently the Commission did not think the Act required such regulations and, so far as we can tell, no litigant claimed that the Act did so. It would be a strange reading of the statute to say that it permits no emergency planning at all (the situation for over thirty years), but that, once an emergency planning regulation is promulgated, it must mandate consideration of earthquakes. The current regulation does not contradict, but furthers, the Act's stated purposes. Under these circumstances, we cannot say that the current emergency planning regulation, as interpreted by the Commission, is in any way inconsistent with the Atomic Energy Act.

The Commission has consistently interpreted its emergency planning regulation not to require consideration of earthquakes. This interpretation contradicts neither the regulatory language nor the Atomic Energy Act and is therefore controlling. Thus, we must uphold the Commission's decision to exclude from the Diablo Canyon licensing proceedings consideration of the potential complicating effects of earthquakes on emergency planning unless we find that the action was arbitrary, capricious, or an abuse of discretion.

B.

Petitioners' final argument that the Commission's exclusion of consideration of earthquakes is arbitrary and capricious is somewhat difficult to follow. The argument appears to take two forms. The first is that the danger of simultaneous but independent events (an earthquake and a radiological emergency) is so great that it must be considered in licensing, and hence be the subject of a hearing. In that form, the argument goes beyond anything said in *Union of Concerned Scientists* and has already been answered. If the Atomic Energy Act and the emergency planning regulation do not require such consideration, then petitioners may not ask this court to rewrite the statute and regulation to deal with their concerns.

The second form of the argument is that the Commission already interprets its regulation to require consideration of such complicating phenomena as fog and heavy rain. It follows, petitioners contend, that it is arbitrary and capricious to refuse to consider earthquakes. This contention rests upon the assumption that the probabilities of fog, heavy rain, and an earthquake are similar. If the probabilities are not similar, it is rational to consider some but not others. At some point the probability of an occurrence becomes so infinitesimal that it would be absurd to say that a hearing about it

is required. Thus, no one would argue, or so we assume, that the Commission had to consider the possibility that a space satellite might fall on the Diablo Canyon plant. And, as we have already pointed out, petitioners agree that no hearing is required on the possibility that a meteorite might strike the plant. It can be shown that the danger posited by petitioners here falls into the same range of improbability. We will first establish that this case concerns only the likelihood of the simultaneous occurrence of an earthquake and a radiological emergency arising from an independent cause. We then turn to the probability of such an event and show why the Commission's decision to exclude its consideration was by no means arbitrary.

The Administrative Procedure Act, 5 U.S.C. § 706 (1982), made applicable by 42 U.S.C. § 2231 (1982), establishes the scope of our review: "The reviewing court shall . . . hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary [and] capricious . . . ." *Id.* § 706(1)(A). This "standard of review is a narrow one. The court is not empowered to substitute its judgment for that of the agency." *Citizens to Preserve Overton Park* v. *Volpe*, 401 U.S. 402, 416 (1971). Moreover, the party challenging an agency's action as arbitrary and capricious bears the burden of proof. *See, e.g., National Association of Regulatory Utility Commissioners* v. *FCC*, 746 F.2d 1492, 1502 (D.C. Cir. 1984). We note that in determining whether agency action is arbitrary and capricious, the Administrative Procedure Act directs that "[t]he court shall review the whole record or those parts of it cited by a party." 5 U.S.C. § 706 (1982). Thus, that the Commission did not include citations to specific pages of the record in its *Diablo Canyon* decision provides no basis for overturning the Commission's decision.

Under its emergency planning regulations, the NRC cannot issue an operating license for a nuclear power

reactor unless it makes "a finding . . . that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 C.F.R. § 50.47(a)(1). Thus, the Commission's decision to exclude consideration of earthquakes from the Diablo Canyon licensing hearings was in effect a decision that it could find that emergency plans for Diablo Canyon that do not plan specifically for the effects of potential earthquakes provide the requisite "reasonable assurance" of "adequate protective measures."

The Commission cited three considerations in support of its decision. We turn to these now.

1. *Earthquake-initiated radiological emergency.* The Commission considered the possibility that an earthquake might cause a radiological emergency at Diablo Canyon and observed: "For earthquakes up to and including the Safe Shutdown Earthquake (SSE), the seismic design of the plant was reviewed to render extremely small the probability that such an earthquake would result in a radiological release. While a radiological release might result from an earthquake greater than the SSE, the probability of occurrence of such an earthquake is extremely low." *Diablo Canyon*, 20 N.R.C. at 251 (footnotes omitted).

The Commission's reasoning is rational and supported by the record. "[T]he SSE is the most powerful earthquake ever expected to occur at the plant site." ALAB-644, 13 N.R.C. 903, 911 (1981). For Diablo Canyon, the SSE was calculated to be an earthquake of 7.5 magnitude. *Id.* at 910. The Licensing Board found that value to be "very conservative." LBP-79-26, 10 N.R.C. 453, 485 (1979). Thus, the Commission could properly conclude that the possibility of an initiating earthquake of a magnitude greater than 7.5 is so low that specific consideration is not justified.

Similarly, the Commission could rationally exclude from consideration earthquakes of magnitudes 7.5 or smaller.

The Commission determined that Diablo Canyon's seismic design is more than adequate to withstand the forces of an SSE without releasing dangerous quantities of radioactivity. *See* CLI-84-12, 20 N.R.C. at 251-52. This means that such earthquakes pose no material threat to the plant. Since petitioners have not challenged this conclusion on appeal, we have no grounds to conclude that the Commission's exclusion of such consideration was arbitary and capricious. As the panel majority stated in a portion of its opinion not vacated by our May 1, 1985 Order: "We must assume, therefore, that the likelihood that an earthquake will trigger a nuclear accident at the facility is so small as to be rated zero." 751 F.2d at 1304 (footnote omitted). The original panel was unanimous on this point. As Judge Wald stated in her partial dissent, the Commission's first conclusion "is adequately supported by findings in the record." *Id.* at 1332. Thus, the only risk to be considered here is that of the simultaneous occurrence of an earthquake and a radiologic release for reasons unrelated to the earthquake.

2. *Simultaneous occurrence of an earthquake and an independently caused radiological emergency.* The Commission determined that "earthquake[s] that would complicate emergency response" as well as occur contemporaneously with "a radiologic release from the plant caused by an event other than an earthquake" are "so infrequent that their specific consideration is not warranted." *Diablo Canyon*, CLI-84-12, 20 N.R.C. at 252. This determination is supported by the record, not merely adequately but, we think, conclusively.

The NRC estimates the representative probability of a serious core melt accident with offsite radiation release requiring protective action (sheltering or evacuation) to be one in a hundred thousand per year. *See* Technical Guidance for Siting Criteria Development, NUREG/CR-2239, SAND 81-1549 at iii, 2-11, 2-12 & table 2.3.1-1 (1982). In 1981, the Commission's Appeal Board con-

sidered evidence relating to the Diablo Canyon operating basis earthquake ("OBE") and rejected the claim that the Diablo Canyon plant is located in an area of high seismicity. The OBE is defined as "that earthquake which, considering the regional and local geology and seismology and specific characteristics of local subsurface material, could reasonably be expected to affect the plant site during the operating life of the plant." 10 C.F.R. Part 100 app. A § III.(d) (1984). By definition, less severe earthquakes are not expected to affect the Diablo Canyon plant site.

Petitioners argue, however, that earthquakes of a magnitude smaller than the OBE might complicate emergency response and therefore should have been considered. Petitioners have cited no support for this assertion. Moreover, the record supports the Commission's decision to exclude consideration of earthquakes of *any* size. Record evidence indicates that seismic activity of any magnitude occurs infrequently along the Hosgri Fault and more particularly, in the San Luis Obispo area. For example, in reviewing the geologic setting of the Diablo Canyon plant site, the Atomic Safety and Licensing Board observed that "[i]n the main southern part of the Coast Ranges province, no [faults other than the San Andreas] show evidence of more than minor seismic activity during Holocene time (the last 10,000 years)." LBP-79-26, 10 N.R.C. 453, 469 (1979). Evaluation of the site prior to the discovery of the Hosgri Fault "established that it is an area of relatively low seismicity." *Id.* at 470. Indeed, a major reason the Hosgri was not discovered sooner was "the absence of seismic activity that would indicate a nearby significant fault." *Id.*

Petitioners have cited nothing to contradict the Commission's conclusion that earthquakes of sufficient magnitude to disrupt emergency responses occur very infrequently. On this point, petitioners cite only a portion of

Commissioner Asselstine's dissent, *see* Pet. Supp. Br. at 18 n.39, which states:

> Publicly available information compiled by the U.S. Geological Survey (USGS) would seem to indicate that earthquakes of sufficient magnitude to cause possible damage, obstruction or disruption to roads, buildings, bridges and communication networks occur throughout many parts of California, including the San Luis Obispo area, with some regularity. . . . According to this information, four earthquakes have occurred in the immediate San Luis Obispo area since 1830 . . . .

CLI-84-12, 20 N.R.C. 249, 263 n.2 (1984) (dissenting views of Commissioner Asselstine).

Petitioners' citation of Commissioner Asselstine's information does not contradict, but amply supports the Commission's conclusion. The source on which Commissioner Asselstine was relying indicates that only four earthquakes of any magnitude have occurred at or near San Luis Obispo during the last 200 years. *See* National Oceanic & Atmospheric Administration, U.S. Dep't of Commerce, Pub. No. 41-1, Earthquake History of the United States 155-86 (Rev. ed. 1973). Moreover, none of these earthquakes is reported to have caused any damage that would interfere with emergency responses. The earthquake of 1830 damaged a church. *Id.* at 156. The earthquake of December 17, 1852 knocked down part of an adobe dwelling and fractured the walls of two others. *Id.* Although the earthquake of June 11, 1903 was felt at San Luis Obispo, the only damage (fallen chimneys) occurred near San Jose. *Id.* at 162. Similarly, the earthquake of December 6, 1906 was felt at San Luis Obispo, but the damage was limited to a cracked lighthouse at Piedras Blancas. *Id.* In short, the information on which petitioners rely in no way undermines the Commission's observation that "earthquakes of sufficient size to disrupt emergency responses at Diablo Canyon would be so in-

frequent that their specific consideration is not warranted." CLI-84-12, 20 N.R.C. at 252.

The probability of any size earthquake occurring in San Luis Obispo in any given year is about one in fifty. If the operating life of the plant is forty years, the probability that any size earthquake and an independent radiologic emergency both will occur at Diablo Canyon during a single year during the life of the plant is one in 125,000.[7] The probability that the two events will occur contemporaneously in a single week during the life of the plant is approximately one in 6,500,000.[8] Thus, it is no objection that the Commission did not hold hearings to determine the size earthquakes required to interfere with emergency responses since earthquakes of any size are very infrequent events in the San Luis Obispo area.

The probabilities are even smaller when we consider the OBE, a somewhat larger earthquake that might more conceivably interfere with emergency responses. For Diablo Canyon, the OBE was calculated to be an earthquake with maximum vibratory ground acceleration of 0.2g. *See* ALAB-644, 13 N.R.C. 903 (1981). The Appeal Board observed that for the Diablo Canyon OBE, "the *lowest* average return period computed by any of the methods used in the analyses is 275 years." *Id.* at 992 (emphasis added). Based on its review, the Appeal Board concluded:

> The record . . . does not bear out the claim that the Diablo Canyon site is one of "high seismicity." The term refers to the frequency of seismic events. Drs. Anderson and Trifunac plotted for the years 1950

[7] The probability that the two events will occur in a particular year is 1 in 5,000,000. The probability that the two events will occur during any year during the life of the plant is obtained by multiplying the above probability times 40 years, the life of the plant.

[8] This probability is derived by multiplying one over 52 times the probability that the two events will occur in any single year during the life of the plant.

> through 1974 the known epicenters in the region, centered around Diablo Canyon, between 33° and 37° north latitude and 119° to 123° west longitude. That plot, and the calculated low recurrence rate of an earthquake of the magnitude assigned the OBE, indicate that *the region is at most one of low to moderate seismicity.*

ALAB-644, 13 N.R.C. at 993-94 (emphasis added) (footnotes omitted).

Based on these figures, the Commission could properly conclude that the probability of the two events occurring contemporaneously is extraordinarily low. The record establishes that the probability of an OBE at Diablo Canyon in any given year is, at most, one in 275. The probability that an independent radiological emergency will occur in a given year is one in a hundred thousand. Since the operating life of the plant is forty years, this means that the probability that an OBE and a radiological emergency will both occur at Diablo Canyon within the space of a single year during the life of the plant is one in 687,500.[9] The probability that the two events will occur contemporaneously (say, within the space of a single week during the life of the plant) is approximately one in 35,750,000.[10] The possibility that an earthquake would disrupt a response to a radiological emergency is so extremely low as to be, for any practical purpose, non-existent.[11] If the NRC is required to hold

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[9] The probability that the two events will occur in a particular year is one in 27,500,000. The probability that the two events will occur during any year during the life of the plant is obtained by multiplying the above probability times 40 years, the life of the plant.

[10] The probability is derived by multiplying one over 52 times the probability that the two events will occur in any single year during the life of the plant.

[11] For an earthquake to complicate an emergency response the two events would probably have to occur closer in time than one week. If a period of 48 hours were chosen, for

hearings on the emergency plans to deal with contingencies of that level of improbability, we can think of no speculative danger that would not require a hearing. Such a conclusion would serve no purpose other than to enable petitioners to hold up licensing for many more years, and probably for a period long enough to make the construction of nuclear power plants entirely economically unfeasible.

Perhaps petitioners' real objection is not that the Commission erroneously concluded that the probability is exceedingly low that an earthquake and an independent accident will occur contemporaneously, but that the Commission acted arbitrarily in refusing to consider earthquakes while permitting consideration of other natural phenomena. *See* Pet. Supp. Br. at 17-18. "Hence," petitioners argue, "[the Commission's] exclusion of earthquakes in the context of emergency planning is not only arbitrary, but irrational." *Id.* at 18. Despite this assertion, it is clear that the Commission's differential treatment of these phenomena is entirely rational.

Petitioners assert that "the Commission *does* consider . . . volcano[es], hurricane[s], [and] tornado[es]," and then state: "Notably, with respect to Diablo Canyon, the Commission allowed Petitioners the opportunity to litigate the potential impacts of tornadoes and hurricanes on emergency response, but provided no basis upon which to conclude that their occurrence is any more probable than an earthquake—the potential impacts of which were excluded from the hearing process." Pet. Supp. Br. at 17-18 (emphasis in original). These are strong statements, and so it is remarkable that petitioners offer no support in their initial brief for either of those assertions. In their reply brief, however, petitioners cite as support, and their only support, Commissioner Asselstine's *Diablo*

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example, the odds against a simultaneous occurrence would be far higher even than those mentioned in the text.

Canyon dissent. The only possibly relevant portion of that dissent states:

> The probability that a tornado will travel through a particular 10-mile area and thereby initiate or disrupt response to an emergency at a nuclear plant must be quite low; yet, the Commission requires consideration of that issue for certain plants. Similarly, the probability of a hurricane striking the San Luis Obispo coastal area and initiating or disrupting an emergency response must also be quite low; yet the Commission considered that very issue in the Diablo Canyon case.

Diablo Canyon, CLI-84-12, 20 N.R.C. at 263 (dissenting views of Commissioner Asselstine).

With respect to tornadoes, petitioners simply misstate Commissioner Asselstine's position. His dissent clearly states that "the Commission requires consideration of [tornadoes] *for certain plants.*" *Id.* (emphasis added). It does not, as petitioners assert, state that the Commission considered tornadoes in the case of Diablo Canyon or that the Commission considers tornadoes for most plants.

Commissioner Asselstine does assert in his dissent that the Commission considered the possibility of a hurricane striking the Diablo Canyon plant. *Id.* But Commissioner Asselstine, like petitioners, provides no record citation to establish that such consideration in fact took place. Indeed, PG & E asserts that Commissioner Asselstine was simply mistaken. PG & E Brief at 17. Thus, petitioners' reliance on Commissioner Asselstine's dissent does nothing to advance their claim. At oral argument, petitioners repeatedly emphasized Commissioner Asselstine's dissent. Petitioners were then specifically asked whether *they* could produce any citations of instances where the Commission had required consideration of infrequent natural phenoma other than earthquakes. Petitioners' reply was that they could not. As a matter of law, petitioners'

reliance on Commissioner Asselstine's unsubstantiated assertion is insufficient to establish that the Commission considered any highly infrequent natural phenomena in its review of the Diablo Canyon emergency plans, and therefore acted arbitrarily in excluding consideration of earthquakes.[12]

In its *Diablo Conyon* decision, the Commission observed that "[w]ith one exception, the focus has always been on frequently occurring natural phenomena." CLI-84-12, 20 N.R.C. at 252. "The one exception is Trojan, for which consideration has been given to the effects of volcanic eruption due to the expectation that another explosion is imminent at Mt. St. Helens." *Id.* at 252 n.4. The Commission's consideration of a volcanic eruption at Mt. St. Helens on emergecy planning at the nearby Trojan plant does not render arbitrary the Commission's decision not to consider earthquakes at Diablo Canyon. A major eruption occurred at Mt. St. Helens in May, 1980, and there was scientific evidence that there was a probability of further volcanic activity in the near future. This is in

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[12] The dissent states that we unfairly refuse to look at Commission decisions not cited by petitioners, yet "unquestionably accept[]" the Commission's assertion that it had previously considered only frequently occurring natural phenomena. Dissent at 21. "Fairness would seem to dictate that both parties cite cases to support their opposing claims before the court accepts either. Here, unfortunately, neither party did so." *Id.* In addition to requiring that the Commission prove a negative, this objection ignores the more basic point that the burden of proof is on the petitioners and that, consequently, they bear the risk of nonpersuasion. Moreover, the cases cited by the dissent (involving, for example, the possibility of severe winter storms), while they may consider occurrences that are to some degree "infrequent," do not compare in degree of rarity with the event whose occurrence is considered here. These are judgments of degree and wherever the spectrum is cut it will always be possible to point out that events on opposite sides of the line are not vastly different.

significant contrast to the situation at Diablo Canyon. Petitioners have pointed to nothing in the record to suggest that there has been an earthquake near Diablo Canyon in the recent past that would have posed any threat to the plant or to emergency responses. As we have already discussed, the Commission reasonably concluded that the possibility that an earthquake would occur at the plant contemporaneously with an independently caused radiological release is too small to require specific consideration. Under these circumstances, the Commission's decision to consider volcanic eruptions at Trojan, but exclude consideration of earthquakes at Diablo Canyon, was entirely rational.

Petitioners correctly point out that "on-the-record consideration was given to complications resulting from other natural phenomena, such as fog and heavy rain." Pet. Supp. Br. at 18-19. In *Diablo Canyon*, the Commission itself stated that "[i]n prior cases, such frequently occurring natural phenomena as snow, heavy rain, and fog have been considered." CLI-84-12, 20 N.R.C. at 252. The Commission went on to stress, however, that "the focus has always been on *frequently occurring* natural phenomena." *Id.* (emphasis added). Thus, the Commission may require consideration of snow for a plant in Pennsylvania where snow occurs frequently. This does not mean, however, that the Commission acts arbitrarily if it excludes consideration of snow for plants in southern Florida.

We cannot say that the Commission decision to consider such frequently occurring natural phenomena as rain and fog, but not to consider the infrequent phenomenon of a major earthquake, was arbitrary and capricious. There is record evidence that dense fog (visibility of less than a quarter mile) occurs, on average, approximately eighty-eight times a year, *see* Evacuation Time Assessment for the Diablo Canyon Nuclear Power Plant at 7, Sept. 1980, Record, vol. 102, applicant's exh.

78 at 7, at Operating License Hearing, Jan. 19-26, 1982, and that heavy rainfall (greater than .31 inches per day) has occurred up to twenty-five times in a given year. *See* Diablo Canyon Units 1 and 2 Final Safety Analysis Report at 2.3A-44, 2.3A-45 table 7 (applicant's exh. 5 at Operating License Hearing, Oct. 18, 1977). This establishes that rain and fog are far more likely to occur at the plant than a major, disrupting earthquake.

It is of no significance that the Commission did not announce a general standard for determining what constitutes frequently occurring and infrequently occurring natural phenomena. We are reviewing the Commission's action *in this case* to determine if it is arbitrary and capricious. To conclude that the Commission did not act arbitrarily and capriciously in this case, it is sufficient that the record establishes that fog is 24,200 times more likely to occur, and rain is 6,875 times more likely to occur, at Diablo Canyon than is a major earthquake. (Contrary to the dissent's charge, this comparison relates the frequencies of rain and fog to that of earthquakes and does not involve multiplying either by the chances of an independent nuclear accident.) Under these circumstances, the Commission certainly drew a rational distinction between rain and fog, on the one hand, and earthquakes, on the other. Given the relative probabilities, this court cannot conclude that the Commission's decision was arbitrary and capricious.

3. *Flexibility of emergency plans.* The Commission gave a third reason for excluding consideration of earthquakes:

> The Commission's view that it need not give specific consideration to the complicating effects of earthquakes on emergency planning in this case is bolstered by the following consideration. Specific consideration has been given in this case to the effects of other relatively frequent natural phenomena. The evidence includes the capability of the emergency

> plan to respond to disruptions in communication networks and evacuation routes as a result of fog, severe storms and heavy rain. In the extreme, these phenomena are capable of resulting in area-wide disruptions similar to some of the disruptions which may result from an earthquake. Testimony in the Diablo Canyon record indicates that adverse weather conditions such as the effect of heavy fog could increase evacuation time to approximately 10 hours. Thus, while no explicit consideration has been given to disruptions caused by earthquakes, the emergency plans do have considerable flexibility to handle the disruptions caused by various natural phenomena which occur with far greater frequency than do damaging earthquakes, and this implicitly includes some flexibility to handle disruptions by earthquakes as well.

Diablo Canyon, CLI-84-12, 20 N.R.C. at 252-53.

Petitioners argue that "the Commission majority provides no support whatsoever for its third assertion" and that therefore the Commission's conclusion about the flexibility of the emergency plans "is complete speculation and nothing more." *See* Pet. Supp. Br. at 18-19. Petitioners' argument is both irrelevant and wrong. The Commission expressly stated that it was citing the inherent flexibility of the emergency plans only to "bolster" its conclusion that specific consideration of earthquakes is not warranted. *See* CLI-84-12, 20 N.R.C. at 252. At the outset of its decision, the Commission set forth the positions of the parties, attributing the flexibility argument to PG & E and the argument based on probability to its staff. *See id.* at 251. The Commission then began its analysis by stating: "The Commission agrees with the NRC staff's analysis in this case." *Id.* Thus, even if petitioners' attack on the flexibility rationale were successful, that would not damage the Commission's basic argument, which was that the coincidence of two highly improbable events was so radically improbable as not to require a hearing.

In any case, the Commission's observations about the inherent flexibility of emergency plans does, in fact, support its decision not to consider earthquakes. Those remarks are also entirely consistent with the emergency planning regulation. Both of these conclusions are easily demonstrated. The regulation sets forth sixteen general standards with which emergency plans must comply. For example, these standards require emergency plans to provide and maintain "[a]dequate emergency facilities and equipment to support the emergency response," as well as to use "[a]dequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological condition." 10 C.F.R. § 50.47(b)(8) & (9). The regulations make no reference to specific conditions or accident sequences. As early as 1981, just one year after the regulations were promulgated, the Commission observed in another context: "The current regulations are designed with the flexibility to accommodate a range of onsite accidents, including accidents that may be caused by severe earthquakes. This does not, however, mean that emergency plans should be tailored to accommodate specific accident sequences . . . ." *San Onofre*, CLI-81-33, 14 N.R.C. at 1092. Thus, the Commission's observation in this case that the Diablo Canyon emergency plans contain a measure of inherent flexibility is supported by the fact that the plans were designed and approved in accordance with the standards of flexibility set forth in the emergency planning regulation.

As the NRC points out, the emergency response plan already in place to deal with frequent natural phenomena has the capacity to be of assistance in coping with problems that may be expected to occur as the result of an earthquake. For example, in the event that commercial telephone lines go down, the plans provide for back-up communications, including radio transmission and telephone lines dedicated specifically to all critical facilities

and organizations. *See* LBP-82-70, 16 N.R.C. 756, 775, 817-18 (1982). Similarly, if roads become unusable, the plan specifically contemplates the use of helicopters, overland vehicles, and boats. *Id.* at 773, 814-16, 834-35. Petitioners' argument is that the Commission should have held a hearing to determine whether these alternate facilities will be useful in the event of an earthquake. But the Commission is not required to hold a hearing to prove what common sense shows, that such backup communication and transportation plans and facilities are likely to prove helpful in the event of an earthquake as well as in the event of a heavy rain. It was, therefore, entirely rational for the Commission to bolster its conclusion with the observation that the emergency response plan already in place has flexibility that would aid in dealing with disruptions caused by earthquakes.

We conclude that petitioners have failed to establish that the Commission's refusal to require emergency response plans to consider earthquakes was arbitrary and capricious or irrational.

C.

In short, petitioners have been unable to advance any reason why the deference normally accorded to an agency's interpretation of its own regulations should not be given to the Commission's interpretation in this case. The Commission has consistently and repeatedly interpreted its emergency planning regulation not to require consideration of the effects of earthquakes in emergency planning and this interpretation is neither plainly inconsistent with the regulatory language nor arbitrary and capricious. Under these circumstances, the Commission's interpretation is controlling. *See United States* v. *Larionoff*, 431 U.S. at 872-73.

Because the NRC was not required by its regulations to consider the potential complication effects of earthquakes on emergency planning in its decision to license

Diablo Canyon, and in fact affirmatively excluded such consideration, there is no merit to petitioners' claim that they were denied a hearing on this issue in violation of section 189(a) of the Atomic Energy Act. *See Union of Concerned Scientists*, 735 F.2d 1437.

III.

Petitioners ask this court to supplement the record to consider transcripts of a closed meeting of the Nuclear Regulatory Commission. Petitioners claim that "[t]he illegitimacy of the Commission majority's decision to exclude earthquakes from emergency planning at Diablo Canyon is confirmed by an examination of the closed meeting transcripts." Pet. Supp. Br. at 21.

Judicial examination of these transcripts would represent an extraordinary intrusion into the realm of the agency. These transcripts record the frank deliberations of Commission members engaged in the collective mental processes of the agency. In a case reviewing action by the Secretary of Agricultulture, the Supreme Court had this to say about the district court's authorization of deposition of the Secretary:

> [T]he Secretary should never have been subjected to this examination. The proceeding before the Secretary "has a quality resembling that of a judicial proceeding." Such an examination of a judge would be destructive of judicial responsibility. We have explicitly held in this very litigation that "it was not the function of the court to probe the mental processes of the Secretary." Just as a Judge cannot be subjected to such scrutiny, so the integrity of the administrative process must be equally respected.

United States v. *Morgan*, 313 U.S. 409, 422 (1941) (citations omitted).

As the Supreme Court has stated, "there must be a strong showing of bad faith or improper behavior before

[inquiry into the mental processes of the administrative decisionmaker] may be made." *Citizens to Preserve Overton Park* v. *Volpe*, 401 U.S. 402, 420 (1971). Petitioners have made no such showing in this case.

Petitioners offer nothing but the transcripts to support their motion to supplement the record. Apparently unable to point to any independent evidence of improper conduct by the Commission, petitioners simply assert that the transcripts alone are sufficient to establish the requisite bad faith and improper conduct on the part of the Commission. We reject this approach. Petitioners must make the requisite showing *before* we will look at the transcripts. We will not examine the transcripts to determine if we may examine the transcripts.

There may be cases where a court is warranted in examining the deliberative proceedings of the agency. But such cases must be the rare exception if agencies are to engage in uninhibited and frank discussions during their deliberations. Were courts regularly to review the transcripts of agency deliberative proceedings, the discussions would be conducted with judicial scrutiny in mind. Such agency proceedings would then be useless both to the agency and to the courts. We think the analogy to the deliberative processes of a court is an apt one. Without the assurance of secrecy, the court could not fully perform its functions.

We deny petitioners' request to supplement the record in this case since petitioners have failed to make an independent showing that the Commission acted improperly or in bad faith.

The Commission's decision is, therefore,

Affirmed.

MIKVA, *Circuit Judge*: I concur in Parts I and II of Judge Bork's opinion and in the result reached by Part III. I write separately, however, to emphasize my understanding of the showing necessary before a court may supplement the record by examining transcripts of a closed commission hearing. I cannot accept the view, *supra* p. 40, that a petitioner asking a court to review transcripts of this nature must always make a prior and independent showing of agency wrongdoing before the court will examine the transcripts. Like a bank policy of offering loans only to borrowers who do not need loans, this view suggests that the transcripts can serve only as cumulative evidence to support a claim already independently established. The plurality claims support for this notion from the Supreme Court's observation that a strong showing of bad faith or improper behavior must precede examination of the administrative decisionmaker's mental processes. *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402 (1971). *Overton Park* based this rule, however, on the availability of administrative findings "made at the same time as the decision." *Id.* at 420. The Court then immediately added, "But here there are no such formal findings and it may be that the only way there can be effective judicial review is by examining the decisionmakers themselves." *Id.*

The *Overton Park* rule protects the administrative decisionmaker's mental processes from routine judicial scrutiny. In other appropriate cases, a court may examine agency transcripts without entering this sensitive terrain of the decisionmaker's thought patterns. The most fruitful yield from agency transcripts may well be information about the tangible ingredients that entered the agency's decision, not inferences about the decisionmaker's biases, motivations, and human weaknesses.

In reconciling the concerns of *Overton Park* with the potential uses of agency transcripts, my view is that the showing demanded of a petitioner is an allegation,

strongly supported by the record, affidavits, and specific references to the transcripts, that the agency has acted in bad faith or with improper purpose. If the court decides that review of the transcripts is called for, it can devise *in camera* procedures to ensure the sanctity of the administrative process. But the plurality's attempt to safeguard agency deliberations by an absolute judicial refusal to inspect transcripts at the threshold of inquiry sweeps too broadly. In practical effect, the plurality's rule may deprive petitioner of the only available, and perhaps the most complete, evidence of agency wrongdoing. Moreover, it creates incentives for concealment from the public and reviewing courts by announcing to the agency that any improper actions taken during their proceedings will be unreviewable so long as no tangible evidence of these improper actions escapes from the meeting room. Only by leaving open the possibility of at least *in camera* judicial inspection of transcripts can the legitimate interests of petitioners and the public in judicial review of agencies and their procedures be vindicated. By stating that a petitioner must produce a "smoking gun" before the court will even look at closed agency proceedings, the plurality insulates the agency's deliberations far beyond the protection contemplated by *Overton Park* or any other controlling precedents.

In this case, I agree with the plurality that petitioners' request to supplement the record with the transcripts must be denied. Petitioners have not made nearly substantial enough a showing to warrant inclusion of the transcripts in the record. Neither petitioners' allegations nor the portion of the transcripts disclosed to us suggests that the agency acted in bad faith in excluding earthquakes from its consideration of emergency planning at Diablo Canyon. For this reason, I concur in the result.

WALD, *Circuit Judge*, with whom ROBINSON, *Chief Judge*, and WRIGHT and GINSBURG, *Circuit Judges*, join, dissenting: Today a majority of the *en banc* court upholds the Nuclear Regulatory Commission's conclusion that its emergency planning regulations neither require nor permit consideration of earthquakes as events which could initiate or complicate an accident at a nuclear power plant located three miles from an active fault.[1] The court reaches this conclusion by narrowly limiting its focus to Commission decisions dealing with earthquakes and emergency planning and by relying on a deceptive set of calculations based on the numerical probabilities of a radiological emergency and an earthquake occurring simultaneously at the Diablo Canyon plant. The case must, however, be viewed in the context of the broader purposes of emergency planning and against the backdrop of the Commission's other emergency planning decisions. The majority's opinion upholding the Commission's rationale *in toto* effectively nullifies emergency planning as an effort to predict what actions would be needed should an accident occur. Instead, under the majority's view, the Commission can avoid the public commitment it made in its regulations simply by declaring that the probability of any accident occurring is too low to bother with. Had the majority surveyed the wider picture, it should have realized that the Commission's decision is woefully inadequate as a piece of logical reasoning, lacking in

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[1] The original *San Onofre* decision on earthquakes and emergency planning held that the regulations do not require consideration of earthquakes and indicated further that such consideration would not be permitted barring amendment of the regulations. *Southern California Edison Co.* (San Onofre), 14 N.R.C. 1091, 1091-92 (1981) [hereinafter cited as *San Onofre*]. Similarly, in the *Diablo Canyon* order the Commission held both that the regulations did not require consideration of earthquakes and that it would not permit consideration in this case. *Pacific Gas & Elec. Co.* (Diablo Canyon), 20 N.R.C. 249, 250, 253-54 (1984) [hereinafter cited as *Diablo Canyon*]; *see infra* at 26 n.17 & 30 n.19.

record support, and patently inconsistent with other interpretations of the emergency planning regulations as well as the underlying purposes of those regulations.[2]

I. Scope of Review

Petitioners argue that the effect of earthquakes on emergency planning at Diablo Canyon is a "material safety issue" requiring a hearing under § 189(a) of the Atomic Energy Act as interpreted in *Union of Concerned Scientists* v. *NRC*, 735 F.2d 1437 (D.C. Cir. 1984), *cert. denied*, 105 S. Ct. 815 (1985). Because the materiality of a safety issue is in large part a function of the Commission's regulations,[3] this claim reduces to a charge that the NRC's interpretation and application of its emergency planning regulations is arbitrary and capricious. *Cf. GUARD* v. *NRC*, 753 F.2d 1144, 1150 (D.C. Cir. 1985). As the majority rightly points out, this court must normally defer to an agency's interpretation of its own reg-

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[2] At the same time this court granted, in part, petitioners' suggestion for rehearing en banc, we granted petitioners' motion for leave to file supplementary exhibits consisting largely of transcripts of closed Commission meetings in which the Commissioners discussed the decision not to allow earthquakes to be considered in the emergency planning for Diablo Canyon. San Luis Obispo Mothers for Peace v. NRC, 760 F.2d 1320, 1321 (D.C. Cir. 1985) (en banc). Because, however, I would find the Commission's order arbitrary and capricious on its face, and in view of the lack of evidence supporting it, I do not reach the second question posed in our unpublished order dated August 12, 1985, on the degree of consideration the court may give to those transcripts.

[3] The majority mischaracterizes the holding of *Union of Concerned Scientists* when it suggests that only issues defined as material in the Commission's regulations merit a hearing. Maj. op. at 8. The court in *Union of Concerned Scientists* clearly stated that a court may always review, under an arbitrary and capricious standard, an agency's determination that an issue is not material to safety. 735 F.2d at 1448 n.20. Such review would be appropriate when a party alleges that existing regulations erroneously fail to require consideration of a material safety issue.

ulation " 'unless it is plainly erroneous or inconsistent with the regulation.' " *United States* v. *Larionoff*, 431 U.S. 864, 872 (1977) (citation omitted). This rule does not, however, mean that the court abdicates its responsibility to assess the arbitrariness and capriciousness of agency action. Instead, it serves to focus the court's inquiry on several discrete tasks of which one, but only one, is to assure that the interpretation is consistent with the language of the regulation.

A court also needs to assure itself that the regulations are "consistent with the statute under which they are promulgated." *Id.* at 873. This statutory inquiry is difficult to conduct for NRC regulations, however, because the Atomic Energy Act creates "a regulatory scheme that . . . is 'virtually unique in the degree to which broad responsibility is reposed in the administrative agency, free of close prescription in its charter as to how it shall proceed in achieving the statutory objectives.' " *Carstens* v. *NRC*, 742 F.2d 1546, 1551 (D.C. Cir. 1984) (citation omitted), *cert. denied*, 105 S. Ct. 2675 (1985). The Act does not, of course, specifically mention emergency planning, let alone earthquakes.

A third task for a court reviewing the NRC's regulatory interpretations is to inquire into their consistency with both the stated purposes of the regulations and other interpretations of the same regulations. The Supreme Court has held that the Commission's interpretation of its regulations must be accepted only if it "sensibly conforms to the purpose and wording of the regulations" and is "consistent with prior agency decisions." *Northern Indiana Public Service Co.* v. *Porter County Chapter of the Izaak Walton League of America*, 423 U.S. 12, 14-15 (1975) (assessing Atomic Energy Commission regulations). A reviewing court thus must "determine if [the regulatory interpretation] is consistent with . . . the purpose which the regulation is intended to serve." *Cheshire Hospital* v. *New Hampshire-Vermont Hospitali-*

zation Service, Inc., 689 F.2d 1112, 1117 (1st Cir. 1982). It must also ensure that the agency has treated like cases similarly or provided a reasoned explanation for any variations. *Airmark Corp.* v. *FAA*, 758 F.2d 685, 691-92 (D.C. Cir. 1985).

Finally, a reviewing court must insist that the agency provide a clear explanation of the factual and policy bases for its regulatory interpretation. Errors rendering an action arbitrary and capricious cannot even be spotted unless the agency has "articulate[d] a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle Manufacturers Association* v. *State Farm Mutual Automobile Insurance Co.*, 463 U.S. 29, 43 (1983) (citation omitted). As this court regularly points out, "[a]lthough our judicial duties demand great deference to agency expertise, we cannot defer, indeed we cannot even engage in meaningful review, unless we are told *which* factual distinctions separate arguably [similar situations], and *why* those distinctions are important." *Public Media Center* v. *FCC*, 587 F.2d 1322, 1331 (D.C. Cir. 1978). An agency cannot fulfill the requirement of an adequate explanation merely by insisting that its conclusions are rational and supported by the record. Instead, it must give the court "the rationale underlying the importance of factual distinctions as well as the factual distinctions themselves." *Id.* at 1332.

The NRC's order excluding earthquakes from consideration in the emergency planning for Diablo Canyon cannot stand up to this kind of scrutiny. The NRC has totally defaulted in providing any satisfactory explanation of why it interpreted the emergency planning regulations to exclude all consideration of earthquake complications in the emergency planning for a facility whose design proceedings centered on the plant's proximity to an active earthquake fault. In particular, many of the rationales the NRC has provided are inconsistent with

the stated purpose of the emergency planning regulations and with earlier and later applications of those regulations.

II. Ignoring the Purposes of Emergency Planning

The majority never faces up to petitioners' most telling argument: that the Commission's interpretation of its emergency planning regulations is inconsistent with the fundamental purposes of those regulations. Petitioners' Br. at 16-17; *see Diablo Canyon*, 20 N.R.C. at 262 (Commissioner Asselstine, dissenting) (Commission's decision is inconsistent with the regulations' "judgment that adequate emergency planning is an essential element in protecting the public health and safety independent of the Commission's other regulations and safety reviews focusing on the design of the plant itself' "). The requirement that a regulatory interpretation be consistent with the original reasons for promulgating the regulations must be strictly enforced in order to prevent agencies from making major changes in regulatory direction *sub silentio*—as the Commission appears to be doing here.

A. *The Purposes of the Regulations*

When the emergency planning regulations were issued in 1980, they reflected a major shift from the Commission's conception of emergency planning prior to the accident at the Three Mile Island ("TMI") nuclear power plant. As the NRC explained when it proposed the regulations,

> The proposed rule is predicated on the Commission's considered judgment in the aftermath of the accident at Three Mile Island that safe siting and design-engineered features alone do not optimize protection of the public health and safety. . . . Emergency planning was conceived as a secondary but additional measure to be exercised in the unlikely event that an accident would happen. The Commission's per-

> spective was severely altered by the unexpected sequence of events that occurred at Three Mile Island. The accident showed clearly that the protection provided by siting and engineered safety features must be bolstered by the ability to take protective measures during the course of an accident.

44 Fed. Reg. 75,167, 75,169 (1979). These views were echoed in the preamble accompanying the final regulations. 45 Fed. Reg. 55,402, 55,403 (1980).

In adopting these emergency planning regulations, the NRC espoused the "fundamental philosophy" of emergency planning first proposed by the Kemeny Commission in the aftermath of the TMI accident. This philosophy requires all relevant actors to "do everything possible to prevent accidents of this seriousness, but at the same time [to] assume that such an accident may occur and be prepared for response to the resulting emergency." *Report of the President's Commission on the Accident at Three Mile Island* 17 (1979), *reprinted in* Record Volume 69, Joint Intervenors' (J.I.) Exhibit 114A (for identification only).[4] A previous Commission interpretation of the regulations similarily noted that "[t]he underlying assumption of the NRC's emergency planning regulations in 10 CFR § 50.47 is that, despite application of stringent safety measures, a serious nuclear accident may occur." *Southern California Edison Co.* (San Onofre), 17 N.R.C. 528, 533 (1983), *vacated on other grounds sub nom. GUARD* v. *NRC*, 753 F.2d 1144 (D.C. Cir. 1985). Basing the regulations on the assumption that an accident can occur despite other safeguards highlights the importance of "emergency planning as equivalent to, rather than secondary to, siting and design in public protection." 44 Fed. Reg. at 75,169. These contemporaneous statements of the purpose of the regula-

[4] All citations to the record will hereinafter refer to the volume of the record ("Rec. Vol.") and, when possible, to either the exhibit number ("Ex.") or transcript page ("Tr.").

tions, and not the NRC's later representation to this court that "emergency planning [is] a backstop rather than a front-line defense," NRC Br. at 26, must guide the interpretation of the emergency planning regulations.

B. *Inconsistencies with the Regulation's Purposes*

Two of the most important reasons for the exclusion of earthquake effects from emergency planning cited by the majority and the Commission are inconsistent with the stated purposes of the regulations. The first is the Commission's conclusion that earthquakes smaller than the Safe Shutdown Earthquake ("SSE") need not be considered as initiators of accidents because "the seismic design of the plant was reviewed to render extremely small the probability that such an earthquake would result in a radiologic release." 20 N.R.C. at 251. The second notion, primarily relied upon by the majority, is that the likelihood of a radiological accident occurring at all is a relevant concern in deciding the scope of emergency planning, even though such planning begins with the assumption that an accident—unthinkable as it may be—*will* in fact occur.

Nuclear power plants are designed to withstand a variety of severe natural phenomena, including earthquakes. *See* 10 C.F.R. pt. 50, app. A, criterion 2 (1985). If the operation of these plants always lived up to their designers' hopes, no emergency planning would ever be necessary. The entire thrust of the change in philosophy reflected in the 1980 regulations, however, was to build emergency planning around the assumption "that, despite application of stringent safety measures, a serious nuclear accident may occur." *Southern California Edison Co.*, 17 N.R.C. at 533. The regulations are designed to ensure that "the protection provided by siting and engineered design features [will] be bolstered by the ability to take protective measures during the course of an accident." 45 Fed. Reg. 55,402, 55,403 (1980) (pre-

amble to final regulations). The NRC cannot now, consistently with the stated purpose of its regulations, interpret those regulations to exclude altogether consideration of accidents initiated by earthquakes *solely* on the ground that Diablo Canyon's design makes such accidents highly improbable. *Cf. GUARD* v. *NRC*, 753 F.2d 1144, 1149-50 (D.C. Cir. 1985) (finding interpretation to be irrational in part because it was based on "an assumption [not] properly indulged in an emergency preparedness regulation"). *But see infra* at 11 & n.7 (NRC may exclude earthquakes as initiators because the probability of occurrence is small). In so doing, the Commission is engaging in circular reasoning, since the very purpose of the exercise is to plan for the unthinkable eventuality that the design safeguards will not prevent an accident.

The majority and the Commission, *see infra* at 13-14 & n.10, repeat this mistake when they factor in the probability of a radiological accident occurring at all when evaluating whether earthquakes occur frequently enough to merit consideration as complicating factors. Here again, emergency planning starts from the assumption that an accident has already occurred. Obviously the probability of an adverse event, such as heavy rain or an earthquake, complicating emergency planning after an accident must be taken into account when deciding whether to plan for such an eventuality. But the pertinent probability is that of the complicating event *alone*, not multiplied by the probability of a radiological accident. The majority eventually does compare the independent probabilities of earthquakes and other allegedly frequently occurring phenomena, maj. op. at 35, but only after downplaying the frequency of earthquakes by multiplying their probability by the probability of a radiological accident, maj. op. at 29-30. This calculation, stressed in the majority's opening paragraph, produces deceptively low figures in large part because the low

statistical probability of a radiological accident ever occurring insures that the simultaneous occurrence of an accident and *any* complicating factor is concededly an extremely unlikely event. *See infra* at 19. Thus, "[t]he probability arguments used by the Commission are really arguments that we do not need *any* emergency planning, rather than that we need not consider earthquakes in emergency planning." 20 N.R.C. at 262 (Commissioner Asselstine, dissenting).

By endorsing the NRC's consideration of design adequacy and radiological accident probabilities in emergency planning, the majority invites the continuing erosion of the emergency planning standards. Little is left for the NRC to plan for once it eliminates from consideration not only initiating events the plant has been designed to withstand but any complicating event with a low probability of occurrence after it has been multiplied by a factor of 0.00001 to reflect the 1 in 100,000 chance of a radiological accident occurring in the first place.[5] These exceptions will easily swallow the whole of the plan. The NRC is, of course, free to change its regulations to make "emergency planning . . . a backstop rather than a front-line defense." NRC Br. at 26. As of now, however, emergency planning is supposed to be "equivalent to, rather than . . . secondary to, siting and design in public protection." 44 Fed. Reg. at 75,169. The regulations must be interpreted accordingly.[6]

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[5] The majority, the NRC staff, and PG&E all rely on an estimated accident probability of 10^{-5} or 1 in 100,000. Maj. op. at 26; NRC Staff's Memorandum Regarding Consideration of Effects of Earthquakes on Emergency Planning (CLI-84-4) at 4 n.3 (May 3, 1984), *in* Rec. Vol. 168; PG&E Br. at 13-14 & nn.14-15.

[6] The majority errs in finding that it requires "a strange reading of the statute to say that it permits no emergency planning at all (the situation for over thirty years), but that, once an emergency planning regulation is promulgated, it must mandate consideration of earthquakes." Maj. op. at 22.

III. The "Arbitrary and Capricious" Nature of the Commission's Rationales

The *Diablo Canyon* decision is arbitrary and capricious solely because of its fundamental inconsistency with the putative purposes of the emergency planning regulations. In addition, the Commission's three stated reasons for excluding earthquakes from emergency planning at Diablo Canyon, and the majority's acquiescence in them, provide further evidence of the decision's arbitrariness.

A. *Earthquake-Initiated Radiological Emergency*

The Commission's first rationale for interpreting the emergency planning regulations to exclude earthquake complications is that the probability of an earthquake *causing* a radiological release is too small to be of concern. This conclusion is dependent on two separate findings about different-sized earthquakes:

> For earthquakes up to and including the Safe Shutdown Earthquake (SSE), the seismic design of the plant was reviewed to render extremely small the probability that such an earthquake would result in a radiologic release. While a radiologic release might result from an earthquake greater than the SSE, the probability of occurrence of such an earthquake is extremely low.

20 N.R.C. at 251 (footnotes omitted). I agree that by definition earthquakes greater than the SSE occur too infrequently to warrant consideration, since the SSE is the strongest earthquake that could ever be expected to

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All petitioners are saying is that once the NRC interpreted the Atomic Energy Act to require emergency planning regulations in order to protect public health and safety, it must interpret those regulations consistently with that purpose. Any subsequent change in statutory interpretation by the agency would, of course, require a reasoned explanation.

hit the Diablo Canyon site.[7] On the other hand, I believe that the Commission erred by excluding smaller earthquakes from consideration as accident initiators.

One of the two arguments supporting the Commission's decision to ignore earthquakes smaller than the SSE has already been addressed. The Commission's conclusion that such earthquakes will not initiate a release given the plant's design is inconsistent with "[t]he underlying assumption of the NRC's emergency planning regulations . . . that, despite application of stringent safety measures, a serious nuclear accident may occur." *Southern California Edison Co.* (San Onofre), 17 N.R.C. 528, 533 (1983); *see supra* at 5-7. In the emergency planning context, design *alone* cannot justify barring consideration of a natural hazard which may initiate a radiological accident.[8]

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[7] *Pacific Gas & Electric Co.* (Diablo Canyon), 10 N.R.C. 453, 490 (A.S.L.B. 1979). The NRC adequately explained why the regulations do not require consideration of the complicating effects of earthquakes greater than the SSE. As I explain later, the Commission can consider the likelihood of an initiating or complicating event occurring and exclude from consideration those with such low probabilities that they would not warrant prudent risk reduction methods. *See infra* at 18. Here the Commission noted that an earthquake greater than the SSE was extremely unlikely to occur and would cause so much damage that emergency response would have only marginal benefits. 20 N.R.C. at 251-52. While drawing the line between probabilities will sometimes prove difficult, *see infra* at 15-23, the Commission clearly does not have to consider an event as unlikely as an earthquake greater than the 7.5 magnitude SSE for Diablo Canyon. 10 N.R.C. at 489 (7.5 magnitude earthquake will occur once every 100,000 years).

[8] The panel opinion's unanimous finding "that the likelihood that an earthquake will trigger a nuclear accident at the facility is so small as to be rated zero," 751 F.2d at 1304, is thus inapposite here. That conclusion was based on an evaluation of design precautions. But emergency planning standards operate on different assumptions than design

The majority also argues that *no* natural hazard need be considered as an accident initiator because the Commission's guidance document on emergency planning specifies that "[n]o single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree." NRC & FEMA, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants* 6 (Revision 1 1980) [hereinafter referred to as NUREG-0654]; *see* maj. op. at 14. This argument was not, however, relied upon by the NRC in the *Diablo Canyon* decision, 20 N.R.C. at 251-52, and was only alluded to in the *San Onofre* decision, 14 N.R.C. at 1092. In any event, the argument is based on a misreading of the guidance document, NUREG-0654. The admonition not to plan based solely on a *single* accident sequence does not preclude planning based on an assessment of the differing consequences of a range of accidents triggered by differing initiating events. The previous sentence in NUREG-0654 states that the objective of emergency response plans is to provide protection against a spectrum of accidents, NUREG-0654 at 6, and different types of accidents obviously require different types of emergency planning.[9]

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standards: in the emergency planning context, the NRC assumes that an accident can occur *despite* the plant's engineering and siting safeguards. Thus, in interpreting the emergency planning regulations the Commission cannot assume that design safeguards will be totally effective and eliminate the possibility that an earthquake smaller than the SSE will cause a radiologic release.

[9] The Diablo Canyon emergency plan accordingly contains onsite procedures for plant operators to follow when any of several initiating events, including earthquakes, trigger one of four emergency action levels. Rec. Vol. 98, App. Ex. 73 at Table 4.1-1 (emergency action levels); Rec. Vol. 100, App. Ex. 75 at EP M-4 (procedures for earthquakes).

Indeed, the Commission itself recently acknowledged that "the capability of the surrounding population to respond to an accident initiated by a severe external event, such as an earthquake or hurricane, would differ significantly from the capability to respond to other accidents." *Consolidated Edison Co.* (Indian Point), 21 N.R.C 1043, 1058 (1985). This refreshing dose of common sense from the Commission suggests that the *Diablo Canyon* stand on earthquakes may indeed be an aberration dictated by frustration at the ten year delay in bringing the plant on line. Be that as it may, the NRC's reasons for ignoring any consideration of smaller-than-SSE earthquakes as initiators of radiological accidents makes no sense given the purposes of emergency planning and the requirements of the regulations as explained in NUREG-0654.

B. *Simultaneous Occurrence of an Earthquake and an Independently Caused Radiological Emergency*

The Commission and the majority have also dismissed the need to consider the simultaneous occurrence of a radiologic release and an unrelated earthquake. The NRC decision distinguished such an occurrence from other off-site complications which are routinely considered in emergency response planning as follows:

> NUREG-0654 does call for some consideration of site-specific adverse or emergency conditions on emergency response. In prior cases, such frequently occurring natural phenomena as snow, heavy rain, and fog have been considered. With one exception, the focus has always been on frequently occurring natural phenomena. *The Commission believes, based on the information provided by the parties, that earthquakes of sufficient size to disrupt emergency response at Diablo Canyon would be so infrequent that their specific consideration is not warranted.*

20 N.R.C. at 252 (footnote omitted) (emphasis added). The majority has expanded upon this rationale, quantify-

ing the Commission's qualitative conclusion that earthquakes of a size likely to affect emergency response occur too infrequently to warrant consideration and, in the process, factoring in the probability of a radiological accident occurring in the first place.[10]

None of the reasons given by the Commission—or the majority—for excluding consideration of earthquakes which coincide with a radiological accident can stand up even under the deferential scrutiny of "arbitrary and capricious" review. I have already explained why the majority's focus on the probability of a nuclear accident is irrelevant in deciding how to respond to such an accident. *See supra* at 8-9. The major failing of this portion of the NRC's decision, however, is that the Commission has totally failed to present any coherent standard for determining which natural phenomena meet its "frequently occurring" standard or to substantiate the application of any such standard to Diablo Canyon. The Commission's "frequently occurring" standard for decid-

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[10] The Commission never quantified the probabilities involved in the manner suggested by the majority, the NRC staff, and PG&E. Maj. op. at 26-31; NRC Staff's Memorandum Regarding Consideration of Effects of Earthquakes on Emergency Planning (CLI-84-4) at 4 n.3 (May 3, 1984) *in* Rec. Vol. 168; PG&E Br. at 13-14 & nn.14-15. At one point in the opinion the majority assumes that the Commission adopted the whole of the staff's analysis, maj. op. at 36, but the staff analysis to which the Commission referred, 20 N.R.C. at 251 & n.1, was a January, 1984 memorandum which contained no such quantitative analysis, *see* 19 N.R.C. at 946-52. Indeed, it seems odd to infer that the Commission performed such a quantitative, probabilistic analysis when its discussion of the occurrence rates of natural hazards was wholly qualitative and never considered the probability of an accident occurring at all. 20 N.R.C. at 251-52. To the extent the NRC did not in fact rely on this quantitative rationale, the majority advances without warrant a post-hoc rationalization for the agency's decision. Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Automobile Insurance Co., 463 U.S. 29, 43 (1983).

ing which natural phenomena merit attention as complicating factors in emergency planning is inadequately explained and justified, inconsistent with the way the Commission has applied emergency planning regulations to other offsite natural phenomena in the Diablo Canyon proceeding and in other licensing proceedings, and impossible to apply to Diablo Canyon based on the record in this proceeding.

1. *The Inadequate Definition of "Frequently Occurring"*

The Commission says that earthquakes are not the type of "frequently occurring" natural hazards to which the emergency planning regulations are addressed. The majority goes even further and purports to have difficulty in finding any references to natural hazards at all in the planning regulations or guidance document. Maj. op. at 11-15. It is noteworthy that neither the Commission's final order in this case nor the relevant staff memoranda [11] ever questioned the proposition that the emergency planning regulations, as explained in NUREG-0654, require consideration of *some* offsite natural hazards which may initiate or complicate emergency planning. *Diablo Canyon*, 20 N.R.C. at 252; *Pacific Gas & Electric Co.* (Diablo Canyon), 19 N.R.C. 937, 941-44 (1984). The critical question is *which* such phenomena require consideration. To illuminate that question, I will briefly trace the regulations' requirement that some natural hazards be considered in emergency planning.

The overall emergency planning regulation is indeed broadly worded, providing only that "no operating license

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[11] While the majority correctly points out that the staff's prior position on interpretation of the regulations normally cannot bind the Commission, the second memorandum—dated January 3, 1984—seems to have been adopted by the Commission in *Diablo Canyon*. *See* 20 N.R.C. at 251 & n.1 (explaining that the NRC "agrees with the staff's analysis in this case" as advanced in the 1984 memorandum).

for a nuclear power reactor will be issued unless a finding is made by NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 C.F.R. § 50.47(a)(1)(1985). Its scope is, however, refined by the further requirement that response plans comply with sixteen listed standards. 10 C.F.R. § 50.47(b). The relevant standard here requires the utility to develop, "consistent with Federal guidance," a range of protective actions "appropriate to the locale" to be taken in the event of an emergency and guidelines for choosing among these alternative actions. 10 C.F.R. § 50.47(b)(10). The federal guidance referred to is NUREG-0654, which provides in several places for consideration of natural hazards and other offsite phenomena.[12] The Commission and staff have themselves focussed on natural hazards by requiring that evacuation time estimates consider site-specific adverse weather characteristics, 20 N.R.C. at 252; 19 N.R.C. at 943-44; NUREG-0654, app. 4 at 4-6, which the staff defines as those "which might reasonably be expected to occur *during the plant lifetime at a particular site* and be severe enough to affect the time estimates for a particular event," 19 N.R.C. at 944 (emphasis added).

The demands of NUREG-0654, as acknowledged by the Commission, are that site-specific natural hazards be considered in emergency planning. The majority must therefore rely on its more extreme argument that even if NUREG-0654 requires consideration of natural hazards, that document is only guidance and is not binding on the

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[12] *See* NUREG-0654 at 42 (procedures that provide for emergency actions to be taken should "tak[e] into account local offsite conditions that exist at the time of the emergency"); *id.* at 63 (plan for implementing protective measures should identify and provide means to deal with "potential impediments (e.g., seasonal impassability of roads) to use of evacuation routes"); *id.* app. 4 at 4-6 (evacuation time estimates must consider site-specific adverse weather conditions).

agency. Maj. op. at 15-16. The standard at issue here, however, specifically requires plans to comply with NUREG-0654's "guidance." 10 C.F.R. § 50.47(b)(10). And in its recently proposed rule on earthquakes and emergency planning, the Commission described NUREG-0654 as a "document, developed jointly by the NRC & [the Federal Emergency Management Agency ("FEMA"), which] forms the basis for both NRC and FEMA regulations on emergency planning." 49 Fed. Reg. 49,640, 49,640 (1984). Further, NUREG-0654 itself notes that "FEMA and NRC regard all of the planning standards identified and contained herein as essential for an adequate radiological emergency plan." NUREG-0654 at 5. Finally, NRC licensing boards accord NUREG-0654 "considerable weight" in evaluating emergency plans because it was written by a joint FEMA/NRC committee, considered during the rulemaking process, and specifically referenced in the emergency planning rules. *Long Island Lighting Co.* (Shoreham), 21 N.R.C. 644, 652-53 (A.S.L.B. 1985); *Public Service Co.* (Seabrook), 17 N.R.C. 1170, 1177 n.5 (A.S.L.B. 1983). In view of NUREG-0654's history and the stated reliance on this document by the NRC and its licensing boards, this court should accord NUREG-0654 "considerable weight" in interpreting the emergency planning regulations, rather than altogether denying its pertinence. *Cf. Community for Creative Non-Violence* v. *Watt*, 670 F.2d 1213, 1216 (D.C. Cir. 1982) (court may rely on agency's contemporaneously issued policy statement in interpreting agency regulations).

The majority, finally, claims that reading the regulations to require consideration of *any* natural hazards requires reading them to require consideration of *all* such hazards. Maj. op. at 11 n.2, 14. Yet the Commission has established that the regulations require consideration of some but not all contingencies caused by offsite natural phenomena. NUREG-0654 and the Commission's order in

the *Diablo Canyon* proceeding both acknowledge that some such hazards must be assessed. 20 N.R.C. at 252. Allowing the Commission to draw some line between the hazards it will and will not consider is not necessarily inconsistent with the purpose of the emergency planning regulations, which is to identify "*prudent* risk reduction measures." *Southern California Edison Co.* (San Onofre), 17 N.R.C. 528, 533 (1983) (emphasis in original). Thus, the Commission may consider the probability of a natural hazard occurring and exclude from consideration those which occur so infrequently as to not countenance prudent risk reduction measures. I agree with the majority, maj. op. at 12 n.2, that the only legitimate issue in this case is whether the Commission's line-drawing" was rational; I conclude, however, that petitioners have demonstrated that the Commission's choice was not adequately supported.

The Commission has not adequately explained its decision to limit consideration of natural hazards to "frequently occurring" ones. The only explanation of the "frequently occurring" standard given by the Commission was to list several examples which it said had been considered in "prior cases." By failing to define what constitutes a frequent rate of occurrence—or at least to describe where the cut-off point between frequently and infrequently occurring phenomena might lie—the Commission has made it impossible to apply the standard to hazards other than those specifically listed. And the reference to "prior cases," as I demonstrate in the next section, adds nothing to the bare "frequently occurring" standard.

The majority is ultimately driven to uphold the Commission's "frequently occurring" rationale by supplementing it with arithmetical calculations designed to illustrate the absurdly small probabilities of the simultaneous occurrence of a nuclear plant accident and an earthquake of any size. There are two general problems with the majority's approach. First, as I have stressed

repeatedly, factoring in the probability that an accident will occur conflicts with the fundamental principles of emergency planning, which must proceed on the assumption that a radiological accident has in fact already occurred. *See supra* at 5-9. Second, since, under the majority's analysis, the probability of *any* natural hazard under consideration must always be multiplied by the probability of a radiological accident, this exercise is of no use whatsoever in drawing the line between frequently and infrequently occurring phenomena.

By automatically multiplying the 1 in 100,000 chance of a nuclear accident by the likelihood of any natural hazard occurring, maj. op. at 29-30, the majority reduces all simultaneous occurrences to a "never-never land" beyond rational planning. For example, there is only a one in a million chance that a nuclear accident would coincide with a severe blizzard if such a storm independently has a 10% chance of occurring in any given year, and a one in ten million chance an accident would coincide with a 100 year flood. Yet the Commission has considered both severe blizzards and 100 year floods in emergency planning. *See infra* at 21-23. How then can the Commission, under the majority's approach, rationalize these as "frequently occurring" phenomena? It is not surprising that the majority quickly switches its approach when it discusses the probabilities of concededly "frequently occurring" natural hazards such as fog and heavy rain, and analyzes their occurrence in absolute terms rather than in terms of the probabilities of their coinciding with a nuclear accident. Maj. op. at 34-35. This differential treatment does not, however, make for a convincing rationale as to what natural hazards the Commission should or should not consider.

Thus the majority's quantitative focus cannot disguise the plain truth that the Commission has totally failed to provide any sensible working definition of its "frequently occurring" standard. While the Commission says that

the emergency planning regulations only contemplate consideration of "such frequently occurring natural phenomena as snow, heavy rain, and fog," 20 N.R.C. at 252, it has failed to explain when conditions other than those specifically listed rise to the level of "frequently occurring natural phenomena." And, as I discuss next, this failure is not remedied by looking to those natural hazards considered in prior cases or in the Diablo Canyon proceeding. The Commission's failure to define and apply the "frequently occurring" standard in any comprehensible way renders its interpretation of the emergency planning regulations as excluding consideration of earthquakes in this case an idiosyncratic one, without roots in any rational criteria. *Cf. Railway Labor Executives' Association* v. *United States Railroad Retirement Board*, 749 F.2d 856, 862 (D.C. Cir. 1984) (vacating agency's statutory interpretation for failure to both articulate and apply a standard).

2. *Inconsistency with Other Applications of the Emergency Planning Regulations*

The Commission might have rescued its unfounded "frequently occurring" standard if, as the *Diablo Canyon* opinion claimed, "prior cases" had defined and applied such a standard. 20 N.R.C. at 252. Indeed, consistency of application in prior—and subsequent—cases is a highly important element in assessing whether a regulatory interpretation merits deference. *See supra* at 3-4. The Commission's backhand reference to "prior cases," however, does nothing to identify its criteria or a cutoff point for a "frequently occurring" natural hazard.

The majority accepts too quickly the Commission's bald assertion that prior cases followed a "frequently occurring" standard; it adds that it can find no cases inconsistent with that standard. The majority's lens, however, is a narrow one; it confines its inquiry to the only two Commission opinions which specifically addressed the

issue of earthquakes and emergency planning. Of course, natural hazards other than earthquakes have been considered in many cases under the applicable regulation, 10 C.F.R. § 50.47(b)(10), and those cases shed considerable light on the prevailing interpretation of that regulation. The majority refuses to look at these cases because, it says, petitioners did not provide specific citations. Maj. op. at 31-33. At the same time, however, the majority unquestioningly accepts the Commission's equally undocumented assertion that it has considered only "frequently occurring" natural phenomena in prior cases. *Id.* at 33. Fairness would seem to dictate that both parties cite cases to support their opposing claims before the court accepts either. Here, unfortunately, neither party did so. As a result, I examined all of the available emergency planning decisions to see whether the Commission has in fact consistently interpreted the regulations to require consideration of only "frequently occurring natural phenomena." 20 N.R.C. at 252. My examination concludes it has not.

Several licensing board and Commission decisions have taken into consideration natural hazards which could complicate emergency planning, although these opinions acknowledged that such events occurred only infrequently. The NRC and its licensing boards regularly consider the complicating effects of very severe winter storms on evacuation. *Consolidated Edison Co.* (Indian Point), 21 N.R.C. 1043, 1059 (1985); *Philadelphia Electric Co.* (Limerick), 21 N.R.C. 1219, 1358-60 (A.S.L.B. 1985); *Long Island Lighting Co.* (Shoreham), 21 N.R.C. 644, 815 (A.S.L.B. 1985).[13] Several licensing boards, includ-

[13] Indeed, the Shoreham licensing board has apparently considered offsite phenomena with only a "remote" probability of occurrence on more than one occasion:

> Once again we are called on to predictively resolve an issue generated by the postulated simultaneous occurrence of independent events: in this case, snowstorms of varying

ing the one for Diablo Canyon, have considered the simultaneous occurrence of peak summer beach crowds and heavy rains "even though it is doubtful that a peak vacation period would coincide with heavy rains." Rec. Vol. 102, App. Ex. 78 at 95 (evacuation time study); *see Public Service Co.* (Seabrook), 17 N.R.C. 1170, 1176-80 (A.S.L.B. 1983) (allowing litigation as to evacuation times for busy summer weekend with adverse weather). Finally, as the Commission noted, the emergency plan for the Trojan plant considered the complicating effects of a volcanic eruption at Mt. St. Helens. 20 N.R.C. at 252 & n.4.[14]

Neither does the Diablo Canyon proceeding itself provide much aid in discerning which phenomena occur frequently enough to warrant consideration. An evacuation time study admitted into the record evaluated the effects of such low probability events as the simultaneous

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> intensity occurring simultaneously with a serious radiological emergency at Shoreham. No law of nature prevents the occurrence; the record is silent on its probability (although we think it remote)...

21 N.R.C. at 815. The board concluded that such "remote" situations must be considered but only require the formulation of general response plans. *Id.* As we have noted, the appropriate probability to assess is that of the offsite phenomena, rather than the simultaneous occurrence of the phenomena and a radiological accident. *See supra* at 8-9.

[14] The Commission claims that a volcanic eruption was considered only because of "the expectation that another explosion [was] imminent at Mt. St. Helens." 20 N.R.C. at 542 n.4. There is no indication of such an expectation in the Trojan opinion itself, however; the only discussion of probabilities notes that "if an accident occurred in combination with transportation difficulties due to severe volcanic ashfall, effective protecting measures can still be implemented, albeit with greater difficulty. The probability of these two events occurring simultaneously is, however, extremely low." *Portland General Electric Co.* (Trojan), 12 N.R.C. 241, 243 (Off. of Nuclear Reactor Reg. 1980).

occurrence of heavy rainstorms and peak summer crowds (an event far less likely to happen than heavy rains alone) and of flood levels projected to occur once every 100 years. Rec. Vol. 102, App. Ex. 78 at 67-69, 95. If a once in 100 years flood is frequent enough to warrant attention, why is not the once in 275 years recurrence of the Operating Basic Earthquake? Both probabilities are of the same order of magnitude.

These "prior cases" appear to follow the staff's position [15] that adverse weather conditions should be considered as complicating factors in emergency response if they "might reasonably be expected to occur during the plant lifetime at a particular site and be severe enough to affect the time estimates for a particular event." 19 N.R.C. at 944. They certainly indicate that the Commission's rigid position in *Diablo Canyon* that earthquakes may not be considered in emergency planning differs from prior and subsequent interpretations of the same regulation with regard to other infrequently occuring phenomena. Without any explanation of these differences, the NRC's interpretation of the emergency planning regulations as encompassing only "frequently occurring" natural hazards does not merit deference.

3. *Misapplication of the Standard*

Even if the Commission had defined and even previously applied a "frequently occurring" standard for determining which offsite phenomena merit attention in

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[15] While the majority correctly points out that the staff's prior position on interpretation of the regulations cannot bind the Commission, the staff's working definition of 10 C.F.R. § 50.47(b)(10) is relevant in determining what interpretation has been applied in other cases. NUREG-0654 defines § 50.47(b)(10) to require evacuation plans to consider site-specific adverse weather conditions. NUREG-0654, app. 4 at 4-6. The definition quoted in the text from the 1982 staff memorandum indicates which conditions the staff believes must be considered to meet that requirement.

emergency planning, the Commission lacked substantial evidence in this record to support application of any such standard. In order to apply any version of this standard, the NRC would have had to compare the probability of occurrence of "frequently occurring natural hazards" with that of an earthquake "of sufficient size to disrupt emergency response at Diablo Canyon." 20 N.R.C. at 252. *This calculation was not and could not have been performed by the NRC based on the existing record.* The NRC never discussed—and indeed the record contains no evidence on—what size earthquake would disrupt emergency response and how frequently such earthquakes occur in the Diablo Canyon area.

Because the severity and frequency of earthquakes are related, the Commission cannot say that *earthquakes* are or are not frequently occurring natural phenomena. Rather it must conclude that, in the Diablo Canyon area, *earthquakes of a given size* occur only infrequently. A relevant discussion would have to include information as to what size earthquake would disrupt offsite response and how frequently such earthquakes occur near Diablo Canyon.

Here the relevant size earthquake is that "sufficient . . . to disrupt emergency response at Diablo Canyon." 20 N.R.C. at 252. But the NRC did not and apparently could not explain what size earthquake would have disruptive *offsite* effects. The record does not contain *any* information on the offsite consequences of different-sized earthquakes because all evidence on offsite effects of earthquakes of any size was specifically rejected as inadmissible. *See infra* at 30 n.19. Indeed, the only record evidence on offsite consequences of earthquakes was contained in two staff memoranda, and that evidence indicated that earthquakes smaller than the SSE *could* disrupt offsite emergency response at Diablo Canyon.[16] The

[16] While the staff memoranda cannot create a *legal* interpretation binding on the Commission, *see* maj. op. at 16, they do

majority's citation to a public document, not in the record, on the effects of several earthquakes that have occurred in the Diablo Canyon area, maj. op. at 28-29, cannot override the NRC's conscious decision to exclude all evidence on what size earthquakes produce what types of offsite effects.

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indicate the state of the *factual* record on the offsite consequences of earthquakes in California. The staff never veered from its position that the offsite consequences of earthquakes at Diablo Canyon warranted consideration. Earthquakes were a major issue throughout the Diablo Canyon licensing proceedings because the plant is located only three miles from the Hosgri Fault, a fact unknown to the utility when it selected the site. *Pacific Gas & Electric Co.* (Diablo Canyon), 16 N.R.C. 756, 760 (A.S.L.B. 1982). Seismic issues pervaded the design portion of the licensing proceedings. *See generally Diablo Canyon*, 13 N.R.C. 903. Not surprisingly, before the *San Onofre* decision the NRC staff working on Diablo Canyon had requested applicant PG&E to evaluate the potential complicating effects of earthquakes on emergency planning, specifically asking about disruption of offsite communication networks and transportation routes because "[i]n California, such occurrences appear to be frequent enough to warrant consideration in your emergency plans." Rev. Vol. 69, J.I. Ex. 117.

In the meantime, the NRC staff was considering earthquake effects on emergency planning because the *San Onofre* decision had said that the NRC would "consider on a generic basis whether regulations should be changed to address the potential impacts of a severe earthquake on emergency planning." 14 N.R.C. at 1092. The staff's resulting memorandum to the Commission, dated June 22, 1982, concluded that "[p]lanning for earthquakes which might have implications for response actions . . . in areas where the seismic risk of earthquakes to offsite structures is relatively high may be appropriate (*e.g., for California sites* and other areas of relatively high seismic hazard in the Western U.S.)." 19 N.R.C. at 941 (emphasis added). A second memorandum again noted that "[o]ffsite damage generated by earthquakes can significantly affect nuclear emergency response," especially on the West Coast where ground motion levels capable of causing severe offsite damage may be lower than the plant's Safe Shutdown Earthquake. *Id.* at 947.

The NRC staff, PG&E, and the Commission (in the "special circumstances" [17] portion of its opinion) implicitly assume that the appropriate size earthquake to consider is the Operating Basis Earthquake ("OBE"). They argue that such an earthquake has a low occurrence rate in the Diablo Canyon area, about 1 in 275 years. *Pacific Gas & Electric Co.* (Diablo Canyon), 13 N.R.C. 903, 992 (A.S.L.A.B. 1981). The NRC has not, however, provided any reason to believe that the OBE is the smallest earthquake that could disrupt *offsite* emergency response. The OBE is simply "the strongest seismic event considered

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[17] In an earlier order to the parties in this proceeding, the Commission asked whether the regulations required consideration of earthquakes and, if not, whether such consideration should be permitted for Diablo Canyon because of "special circumstances." 19 N.R.C. at 938-39. The Commission was referring to its regulation providing for waivers of and exceptions to regulations when "special circumstances with respect to the subject matter of the particular proceeding are such that application of the rule or regulation (or provision thereof) would not serve the purposes for which the rule or regulation was adopted." 10 C.F.R. § 2.758(b) (1985). This waiver provision, however, seems to be totally inapposite to the Diablo Canyon proceeding. The "special circumstances" regulation is used to consider site-specific attributes which affect the application of generic regulations. The emergency planning regulation at issue here already takes site-specific factors into account. *See supra* at 15-16. Obviously if an earthquake is not a site-specific phenomenon worthy of consideration it is also not a special circumstance requiring waiver of the emergency planning regulations.

Neither does the Commission's concession that special circumstances might sometimes permit consideration of earthquakes change the fact that the Commission's decision interprets the emergency planning regulations to neither require nor permit consideration of earthquake complications. *See infra* at 1 n.1. The "special circumstances" regulation only allows the NRC not to apply a regulation. Thus, the only way earthquakes can be considered under the Commission's interpretation of its emergency planning regulations is for the regulations not to be applied.

likely to occur during the operating lifetime of a nuclear power plant." *Id.* at 989; *see* 10 C.F.R. pt. 100, app. A, § III(d) (1985); *cf.* maj. op. at 27 (less severe earthquakes won't affect the *plant site*). The Commission and the majority seem to have focussed on this size earthquake not because of its capacity to cause offsite disruptions, but because there is some record evidence on its frequency. The record is absolutely bare, however, as to whether earthquakes smaller than the OBE could cause significant offsite disruptions.

There is, on the other hand, some evidence in the record that smaller earthquakes occur much more frequently than larger ones in the Diablo Canyon area. Rec. Vol. 47, Board Ex. 2J at Tables I & II & Fig. 2 (earthquakes of magnitude 5.0 are expected to occur 45 times in the next fifty years, those of magnitude 5.5, 16 times, and those of magnitude 6.0, 6 times); *see* Rec. Vol. 47, Board Ex. 2F at Table II. This record evidence flatly contradicts the majority's conclusion, again based on extra-record evidence, that the probability of any size earthquake occurring in the Diablo Canyon area in any given year is about one in fifty. Maj. op. at 28-29.[18]

In sum, the Commission has failed to either define or apply the "frequently occurring" standard in any rational way as it affected earthquakes around Diablo Canyon. As a rationale for excluding the complicating effects of all

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[18] Indeed, if we are to rely on extra-record evidence on the frequency of earthquakes I would note that the last month has been marked by heavy earthquake activity in California. Three earthquakes struck Northern California between March 29 and March 31, with the last measuring 5.3-5.6, the strongest earthquake to hit the area since a 6.2 earthquake in April, 1984. The March 31 earthquake was felt in San Luis Obispo. N.Y. Times, April 1, 1986, at A18, col. 6; Washington Post, April 1, 1986 at A4, col. 4; Time, April 14, 1986, at 33. In addition, three mild earthquakes occurred in Southern California in quick succession in early April. Washington Post, April 6, 1986, at A21, col. 2.

earthquakes from emergency planning, the standard flops badly.

C. *Flexibility of the Emergency Plan*

The Commission's last attempt at rationalizing the exclusion of earthquake planning from the Diablo Canyon licensing proceedings was billed as not an independent ground for its decision but rather a "consideration" which "bolstered" its conclusion. The Commission explained that

> [s]pecific consideration has been given in this case to the effects of other relatively frequent natural phenomena. . . . In the extreme, these phenomena are capable of resulting in area-wide disruptions similar to some of the disruptions which may result from an earthquake. . . . Thus, while no explicit consideration has been given to disruptions caused by earthquakes, the emergency plans do have considerable flexibility to handle the disruptions caused by various natural phenomena which occur with far greater frequency than do damaging earthquakes, and this implicitly includes some flexibility to handle disruptions by earthquakes as well.

20 N.R.C. at 252-53.

The NRC is correct in saying that it may—perhaps must—assess the flexibility of an emergency response plan to meet different kinds of exigencies. The Commission has previously explained that "there should be core planning with sufficient planning flexibility to develop a reasonable *ad hoc* response to those very serious low probability accidents which could affect the general public." *Southern California Edison Co.* (San Onofre), 17 N.R.C. 528, 533 (1983). Although the sufficient flexibility rationale is an acceptable one in general, however, it fails to save the Commission's decision in this case because its application lacks substantial evidence in the record.

The Commission's sanguinity about the Diablo Canyon emergency plan's flexibility is grounded in its assumption

that the disruption which would be caused by an earthquake is comparable to the disruption which would be caused by other natural phenomena—such as fog, severe storms, and heavy rain—which were considered in developing the emergency plan. 20 N.R.C. at 252. To make such a finding, however, the Commission needed to compare the effects of earthquakes and the effects of the other natural phenomena. The majority is wrong in asserting that "common sense" alone demonstrates the similarity of the effects of earthquakes and these other natural phenomena on emergency responses to a nuclear accident. Maj. op. at 38. Common sense rather tells us that a factual record is needed to draw such a conclusion. For example, the Commission cites only one piece of evidence of the effects of heavy fog—that it increases evacuation time to ten hours. 20 N.R.C. at 252. Even if that isolated datum constituted sufficient evidence on the effects of natural phenomena other than earthquakes, it is meaningless by itself because the Commission has no record evidence about the effects of an earthquake on evacuation time to compare it with. The problem, in a nutshell, is that the record lacks any evidence on the offsite consequences of an earthquake because the licensing board concluded that all such evidence was inadmissible.

Ironically, the Commission's sufficient flexibility rationale assumes what the Commission goes to great pains to deny—that earthquake effects *should* be considered in emergency planning. All that petitioners seek is the opportunity to litigate the issue of whether the Diablo Canyon plan is flexible enough to accommodate complications caused by earthquakes. The Commission cannot assume that flexibility without any record evidence and parade it as an excuse for not allowing relevant evidence about the disruptive effects of earthquakes into the record. *Cf. GUARD* v. *NRC*, 753 F.2d 1144, 1149 (D.C. Cir. 1985) (a court will not consider even record evidence when the NRC's interpretation of an emergency planning regulation had excluded consideration of that evidence).

III. Conclusion

The NRC's absolute refusal to consider any evidence of complications caused by earthquakes which might cause or occur simultaneously with a radiologic release at Diablo Canyon is inexplicable in legal, logical, or common sense terms. The Commission's decision is inconsistent with the terms of its own regulation and guidance document and with other interpretations of the same regulations. Parts of the decision contradict the purposes of emergency planning.

I am wholly at a loss to understand why the Commission has worked so strenuously to exclude all consideration of earthquakes from these licensing proceedings, when earthquake complications could easily have been explored on the basis of previously prepared exhibits and cross-examination of witnesses already testifying in the proceedings.[19] I can only surmise that the Commission's

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[19] The earthquake issue could easily have been resolved at an early stage in the proceedings. PG&E responded to the staff's initial request for information on earthquakes, *see supra* at 25 n.16, by hiring a consultant, the TERA Corporation, to prepare a report on the complicating effects of earthquakes on emergency planning. *See* Rec. Vols. 102-03, Applicant's Exs. 79, 79(A) & 79(B) (for identification only) (TERA report). The *San Onofre* decision was handed down one week before the pre-hearing conference in the Diablo Canyon full power operating license proceeding. At that conference, the Atomic Safety and Licensing Board concluded that *San Onofre* barred any consideration of the complicating effects of earthquakes on emergency planning, Rec. Vol. 88, Tr. at 11,445-51, a holding swiftly incorporated into an unpublished order, Memorandum & Order, Docket Nos. 50-275 OL, 50-323 OL, slip op. at 2 (A.S.L.B. Dec. 23, 1981), *in* Rec. Vol. 88. Although at the pre-hearing conference the Board had noted that there was sufficient time to appeal before the hearings began if its ruling was in error, Rec. Vol. 88, Tr. at 11,450, the Board later denied a request to certify an appeal because a "decision in regular course by the Commission in response to an appeal from the Board's final initial opinion"

members painted themselves into a corner from which they refused to retreat. It defies common sense to exclude evidence about the complicating effects of earthquakes from a proceeding dealing with how to respond to a nuclear accident at a plant located three miles from an active fault, a plant in which seismic concerns dominated the design and construction proceedings for well over a decade. The majority's preoccupation with probability calculations simply does not justify the Commission's stubborn refusal to do the obvious. The majority has allowed the Commission to interpret its regulations in a manner which undermines the basic purpose of emergency planning and singles out earthquakes for different treatment from other offsite natural phenomena, without giving any good reason for its neglect.

The Emperor has no clothes—earthquakes should have been considered in the emergency planning for a radio-

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would suffice, Memorandum & Order, Docket Nos. 50-275 OL, 50-323 OL, slip op. at 2 (A.S.L.B. Jan. 11, 1982), *in* Rec. Vol. 89.

Accordingly, when emergency planning issues were discussed during the hearings, the licensing board excluded all evidence on earthquakes. The applicant, PG&E, unsuccessfully attempted to introduce its TERA Report into the record, arguing that "just because we aren't to litigate the effects of earthquakes . . . doesn't mean that it's not accepted into evidence if it's part of somebody's plan." Rec. Vol. 90, Tr. at 11,759. Judge Wolf bluntly rejected that reasoning, stating that "[w]e will not permit any evidence regarding earthquakes in this hearing." *Id.* at 11,760. One portion of the TERA Report, on estimation of evacuation times, was later admitted as Applicant's Exhibit 84, but only after all references to earthquakes were blacked out and only after Judge Wolf reaffirmed that he would permit no questioning on the earthquake-related portions of the report. *Id.* at 12,111-14, 12,186-90. PG&E was also barred from placing in evidence Exhibit 80(A), a portion of the revisions to the County's emergency plan for Diablo Canyon which addressed earthquake complications. *Id.* at 11,766-68. Thus, the record could easily have contained all of the information necessary to litigate the earthquake issue.

logical accident at Diablo Canyon. The county government knows this and has factored them into its emergency plans; PG&E commissioned a study on earthquakes at the NRC staff's request and then was told there was no need to litigate or implement it. After more than ten years of public alarm, only a divided Commission and this divided court persist in pretending that earthquakes are not material to emergency planning for a nuclear plant located only three miles from an active geological fault. If that judgment is at fault, history will allow no rehearing.

I respectfully dissent.

APPENDIX B

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Commissioners: Nunzio J. Palladino, Chairman; Thomas M. Roberts, James K. Asselstine, Frederick M. Bernthal, Lando W. Zech, Jr.

In the Matter of
PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant, Units 1 and 2)

Docket Nos. 50-275 OL
50-323 OL

DECISION
(CLI-84-12)

In CLI-84-4, the Commission requested the parties' responses to several questions bearing on whether the circumstances in this case warranted some specific consideration of the effects of seismic events on emergency planning. Responses were received from Pacific Gas and Electric Company (PG&E), the NRC staff, and Joint Intervenors.

After considering these responses, the Commission has determined that the information before it does not warrant departure from the decision in *San Onofre* that the NRC's regulations "do not require consideration of the impacts on emergency planning of earthquakes which cause or occur during an accidental release," and that the determination of whether to amend the regulations to include the consideration of earthquakes should be addressed as a generic matter. *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-33, 14 NRC 1091 (1981).

Accordingly, for the reasons discussed below, the Commission has decided to initiate a rulemaking and has determined that the issuance of a full-power operating license need not be delayed until the conclusion of any such proceeding.

I.

The Commission's first question was whether emergency planning regulations can and should be read to require some review of the complicating effects of earthquakes on emergency planning for Diablo Canyon.

A. *Parties' Views*

PG&E and the NRC staff believe that the Commission should not read its emergency planning regulations and implementing guidance in NUREG-0654 so as to provide for any specific consideration of the complicating effects of earthquakes on emergency response, even in California. For the NRC staff, this appears to present a change from its previous view, expressed most clearly in 1981 in the *San Onofre* proceeding, that some limited consideration of the effects of earthquakes on emergency response was warranted in areas of high seismic activity, especially California.

PG&E's essential argument is that the Commission's emergency planning regulations implicity include the complicating effects of earthquakes as part of the overall consideration of four classes of Emergency Action Levels established in NUREG-0654. In PG&E's view, consideration of the effects of earthquakes on emergency planning is subsumed within the consideration given to the effects of other natural phenomena having similar effects on emergency planning. PG&E is concerned that the explicit consideration of the effects of earthquakes on emergency planning will distort or preferentially align emergency

plans to concentrate on earthquake-related emergencies. Therefore, PG&E believes that it would be redundant and contrary to established planning guidance to require an emergency plan to include consideration of specific accident sequences such as those associated with earthquakes.

The essential argument of the NRC staff is that there is an acceptably low risk to public health and safety associated with not requiring emergency plans to explicitly consider the complicating effects of earthquakes. This staff position is based on its belief that contemporaneous occurrence of an earthquake and a radiologic release has too low a probability to warrant mandatory consideration.[1]

Joint Intervenors take the contrary view that the NRC's regulations and implementing guidance require some consideration of the complicating effects of earthquakes on emergency response for the same reasons that the NRC staff has considered the effects of other natural phenomena on emergency plans.

B. *Analysis*

The Commission agrees with the NRC staff's analysis in this case. The focus of the emergency planning controversy among the parties is on the possible need to consider the contemporaneous occurrence of an earthquake and radiologic release from the plant. For the earthquakes up to and including the Safe Shutdown Earthquake (SSE), the seismic design of the plant was reviewed to render extremely small the probability that

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[1]The details of the staff's position were described in its memorandum to the Commission of January 13, 1984 which was incorporated in CLI-84-4.

such an earthquake would result in a radiologic release.[2] While a radiologic release might result from an earthquake greater than the SSE, the probability of occurrence of such an earthquake is extremely low.[3] In addition, as the NRC staff noted in its January 13, 1984 memorandum to the Commission on the generic subject of earthquakes and emergency planning, for those risk-dominant earthquakes which cause very severe damage to both the plant and the offsite area, emergency response would have marginal benefit because of its impairment by offsite damage. Thus, the Commission agrees with the NRC staff's conclusion that the expenditure of additional resources to cope with seismically caused offsite damage under those circumstances is of doubtful value considering the modest benefit in overall risk reduction which could be obtained.

There remains only the possibility of a contemporaneous occurrenee of both a radiologic release from the plant caused by an event other than an earthquake, and an earthquake that would complicate emergency response. NUREG-0654 does call for some consideration of site-specific adverse or emergency conditions on emergency response. In prior cases such frequently occurring natural

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[2]Indeed, Diablo Canyon has been subjected to special, unprecedented reviews of this issue.

[3]Joint Intervenors have recently moved the Appeal Board to reopen the record on the seismic design bases for Diablo Canyon to consider new seismic information. PG&E has opposed that request. Both parties rely on conflicting expert opinions. The Commission has considered in CLI-84-13 whether this new information warrants a stay and for the reasons stated there, has concluded that the new information does not require a revision of the seismic design basis of Diablo Canyon at this time. The Commission believes that the license condition requiring PG&E to complete a seismic reevaluation of the site by 1988, as new scientific data becomes available, is the appropriate method for considering such new information.

phenomena as snow, heavy rain, and fog have been considered. With one exception, the focus has always been on frequently occurring natural phenomena.[4] The Commission believes, based on the information provided by the parties, that earthquakes of sufficient size to disrupt emergency response at Diablo Canyon would be so infrequent that their specific consideration is not warranted.

The Commission's view that it need not give specific consideration to the complicating effects of earthquakes on emergency planning in this case is bolstered by the following consideration. Specific consideration has been given in this case to the effects of other relatively frequent natural phenomena. The evidence includes the capability of the emergency plan to respond to disruptions in communication networks and evacuation routes as a result of fog, severe storms and heavy rain. In the extreme, these phenomena are capable of resulting in area-wide disruptions similar to some of the disruptions which may result from an earthquake. Testimony in the Diablo Canyon record indicates that adverse weather conditions such as the effect of heavy fog could increase evacuation time to approximately 10 hours. Thus, while no explicit consideration has been given to disruptions caused by earthquakes, the emergency plans do have considerable flexibility to handle the disruptions caused by various natural phenomena which occur with far greater frequency than do damaging earthquakes, and this implicitly includes some flexibility to handle disruptions by earthquakes as well.

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[4]The one exception is Trojan, for which consideration has been given to the effects of volcanic eruption due to the expectation that another explosion is imminent at Mt. St. Helens.

II.

The Commission's second question was whether, even though the regulations do not require it, there are special circumstances for the purposes of 10 C.F.R. § 2.758 that would permit consideration of the effects of earthquakes on emergency planning for Diablo Canyon.

A. *Parties' Views*

Joint Intervenors argue that this case does present special circumstances. They rely on the proximity of the plant to the Hosgri fault, the seismic redesign of the plant to accommodate earthquake-induced ground motion which may result from an SSE on that fault, and the conclusion by the Advisory Committee on Reactor Safeguards (ACRS) that the plant is designed to less conservative criteria than would have been applied to a new plant at that site.

The NRC staff and PG&E respond that Diablo Canyon has been redesigned to take into account its proximity to the Hosgri fault, and, thus, is no different from any reactor which has been designed to accommodate its seismic environment.

B. *Analysis*

The Commission notes that the important safety issue for any plant located in a region potentially affected by seismic activity is not the location of the facility *per se* but the probable consequences of such location for the plant in question. The Commission will not license a plant unless it can make the statutorily required finding that operation of the plant will not result in undue risk to public health and safety. Necessarily, this includes a determination that the seismic design is adequate. Such a finding is not undermined by the circumstances that more conservative criteria might have been applied to a new

plant. The issue is whether operation of the plant as designed will result in undue risk to public health and safety. The Commission's seismic design criteria have been fully addressed for Diablo Canyon and the Commission has determined that the seismic design of the plant presents no undue risk. ALAB-644, 13 NRC 903 (1981).

What remains is the argument that the likelihood of the simultaneous occurrence of an earthquake and a radiologic release from other causes is especially high for this site. The Commission must disagree. The resources, time, and attention devoted to seismic design in this case have been unprecedented, and the information before us does not support the conclusion that the chance of such a simultaneous occurrence is substantially greater than for numerous other nuclear plant sites.

In particular, the Commission takes note of its Appeal Board decision ALAB-644 which concluded that the record does not bear out the claim that the Diablo Canyon site is one of "high seismicity," i.e., an area having a high frequency of seismic events. This conclusion was based on record evidence by Drs. Anderson and Trifunac who plotted for the years 1950 through 1974 the known epicenters in the central California coastal region, centered around Diablo Canyon, between 33° and 37° north latitude and 119° to 123° west longitude. That plot, and the calculated low-recurrence rate of an earthquake of the magnitude assigned the operating basis earthquake (OBE), indicate that the region is at most one of moderate seismicity. Earthquakes of greater magnitude than the SSE would occur with much lower frequency than the OBE. Thus, there has been so showing by Joint Intervenors of special circumstances warranting waiver of the regulations to allow specific consideration of the effects of earthquakes on emergency planning at Diablo Canyon.

III.

The Commission finds that the information and argument presented by the parties in response to the questions posed in CLI-04-4 lead to the conclusion that there is no present need to reconsider the *San Onofre* decision.[5]

Nevertheless, we believe that further generic rulemaking exploring the effects of earthquakes on emergency planning could be useful. In particular, the Commission believes that it will be useful to address whether the potential for seismic impacts on emergency planning is a significant enough concern for large portions of the nation to warrant the amendment of the regulations to specifically consider those impacts. The chief focus of the rulemaking proceeding will be to obtain additional information to determine whether, in spite of current indications to the contrary, cost effective reductions in overall risk may be obtained by the explicit consideration of severe earthquakes in emergency response planning. In addition rulemaking would allow a greater spectrum of public participation in the resolution of this matter on a general, as opposed to plant-specific, basis.

We previously indicated in *San Onofre* that this matter would be considered on a generic basis. Some time ago the NRC staff advised us that, in its view, generic consideration was not necessary. However, we were diverted from this issue by the press of other important Commission business, and we took no action in response to that advice. In retrospect, since we disagree with the NRC staff's view, we should have acted sooner and initiated rulemaking. The need to address this issue in this case has again focused our attention on this matter. By this

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[5]In view of the answers to the first two questions, the third question regarding the specifics of any further consideration of the effects of earthquakes on emergency planning need not be addressed.

order we are indicating our desire to initiate rulemaking shortly, and directing the NRC staff to give priority attention to the matter.

Commissioner Zech participated only in the portion of the order which concerns the initiation of a rulemaking proceeding.

The additional views of Chairman Palladino and Commissioner Bernthal and the dissenting views of Commissioner Asselstine are attached.

It is so ORDERED.

FOR THE COMMISSION

[SEAL]

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.
this 10th day of August, 1984

ADDITIONAL VIEWS OF CHAIRMAN PALLADINO

I agree with the Commission's opinion. I believe that the Commission has adopted a reasonable approach to the question of earthquakes and emergency planning, one which will produce an informed Commission consideration of the policy issue, will not prejudice procedural rights, and will not pose undue risk for the health and safety of the public in the vicinity of Diablo Canyon, as well as other potentially affected plants.

Although, the question before the Commission in this case might be characterized as a question of interpretation of NRC emergency planning regulations, I view the issue as a policy question that has generic dimensions. NRC regulations simply do not address earthquakes and

emergency planning. Further, at least two other plants in California (San Onofre and Rancho Seco) could be affected by the answer to the outcome of our consideration and other plants outside of California might be affected.

NRC can address a policy question by either adjudication or rulemaking. In this instance, rulemaking offers the opportunity for broader and deeper public input. I believe that the Commission could benefit from public comment on issues such as the following: what is the range of probabilities of a coincidental earthquake and radiological emergency and how does this range compare with that for other natural phenomena that could affect emergency response? To what extent does emergency planning under current NRC regulations provide a sufficient planning base to handle the complicating effects of earthquakes? What benefits of significance for emergency preparedness would be expected to result from the consideration of the complicating effects of earthquakes? Further, if the outcome of the rulemaking is that more should be done, then the new requirements can be applied to Diablo Canyon.

It appears to me that the essential arguments in the dissenting opinion are pertinent to the policy question we will address by rulemaking, and have application to *all* California plants (and possibly to plants elsewhere) and not just Diablo Canyon. The assertions (and counter-assertions) of facts and their significance for the policy question can also be examined in the rulemaking and, thus, need not be accepted or argued solely on the basis of the assertions alone. *All* Commissioners have approved this rulemaking and I, for one, have not "already decided the issue."

Rulemaking does not assure Joint Intervenors in this case an opportunity for a formal adjudicatory hearing, but it does provide them an adequate opportunity to be heard. Further, the Joint Intervenors had no assurance of

a formal hearing in the Diablo Canyon operating license proceeding. Their hearing rights depended upon their raising an issue that was cognizable in an NRC hearing. The Commission ruled in *San Onofre* (CLI-83-33, 14 NRC 1091 (1981)) that the matter of complicating effects of earthquakes on emergency planning could not be raised in individual cases, and it reaffirmed the *San Onofre* ruling in this case after providing *all* parties, including the Joint Intervenors, with an opportunity to submit written briefs.

While the delay on the Commission's part in addressing the generic policy question is regrettable, it would be speculative to conclude that the delay prejudiced the rights of the Joint Intervenors in the Diablo Canyon proceeding. The outcome of a more timely generic proceeding might have been a final rule that the complicating effects of earthquakes need *not* be considered.

Operation of the Diablo Canyon plant during the interim while the Commission conducts rulemaking does not, in my judgment, pose a significant risk to the public. The probability of an earthquake that would impede emergency response action is exceedingly small for that period of time.

COMMISSIONER BERNTHAL'S ADDITIONAL VIEWS

The Commission has been remiss in not dealing with this issue earlier, as it had indicated three years ago it would. Be that as it may, the question today is how best to proceed, in a manner that assures adequate protection of public health and safety, and is equitable and fair to the parties concerned.

My support of the Commission's order rests on a massive record compiled by the Licensing and Appeal Boards. That record includes the technical judgment of

the best seismologists in this country. Their judgment is that the seismic design basis of this facility is adequate to prevent a radiological release from the most severe earthquake that could reasonably be postulated in the vicinity of Diablo Canyon. The complex basis for this conclusion is entirely consistent with the simple, factual, 200-year recorded history of seismic activity in the vicinity of the plant.

As for the probability of a random simultaneous occurrence of 1) an earthquake which could disrupt emergency planning and, 2) an accident severe enough to result in a radiological release *from other causes*, the comments of the parties in response to CLI-84-4 provided no basis for the notion that such an eventuality ought to be taken into account in emergency planning either generically or for Diablo Canyon specifically. My judgment in this regard is supported by the 200-year record of seismic events in the Diablo Canyon area which indicates that there have been only two events in all of that time which had the potential for *any*, let alone major, disruption of emergency response activities.[1]

Common perceptions and "gut" feelings might seem to argue that, because a plant is located in California, it must be unique. But the numbers for actual California sites, and for the seismic design bases required of all plants to deal with their particular seismic environments, require us to move beyond subjectivity and to consider the facts. The hazards of earthquakes, tornados, hurricanes, and fogs rarely choose to conform themselves to state boundaries. The Appeal Board's conclusion, based on a careful examination of the record, that his particular EPZ area is of "low to moderate seismicity", was not

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[1]Earthquake History of the United States Publication 41-1, 1982 Reprint with Supplement.

casually derived, and is consistent with the 200 years of recorded seismic activity in this region of the nation.

It clearly makes sense to consider, in emergency response planning, hurricane-type events and fog conditions in California or blizzards in the northern half of the United States, since these events occur on at least an annual basis and have widespread and certain effects on road systems and other facilities which must be utilized should an emergency occur at a nuclear facility. But the actual record of seismic activity in this limited geographical area convinces me that earthquakes need not be similarly treated. From all of the information before me at the present time, I therefore find no basis to reconsider the *San Onofre* decision.

California has no monoploy on seismic activity. Three of the four most severe earthquakes ever recorded in the Continental United States occurred in the eastern half of the country. Further, there may be reasoned arguments which are possible, but which have not been made by the parties to the Diablo Canyon proceeding, to support the specific consideration of seismic effects on emergency planning in the areas surrounding nuclear facilities. Therefore, out of an abundance of caution, I have agreed that the Commission should get on with the generic proceeding it committed to initiate in the *San Onofre* decision so that this issue may finally be laid to rest.

DISSENTING VIEWS OF COMMISSIONER ASSELSTINE

The Commission's performance in its handling of this issue — the complicating effects of earthquakes on emergency planning — is most disappointing. In its apparent determination to avoid adjudicating an issue that the agency itself has acknowledged to be material to emergency planning, the Commission has repeatedly changed

its mind about how to treat this issue only to end up right back where it started three years ago — promising a generic rulemaking. In the meantime, the Commission's only accomplishment has been to deny parties the right to adjudicate the issue and to delay any action on this issue until the only two plants, Diablo Canyon and San Onofre, for which this issue probably has any real significance have been licensed.

I cannot agree with the Commission's decision or its reasons for reaching that decision. The Commission's decision ignores fundamental principles of emergency planning, offends common sense, and abuses the legal process. I would recognize the obvious — that earthquakes ought to be considered for plants located in areas of high seismicity such as California, and let the parties adjudicate the specifics in individual cases. I would provide the parties to the Diablo Canyon proceeding an opportunity for a hearing and let them litigate whether the Diablo Canyon emergency plan is flexible enough to deal with the complicating effects of earthquakes on emergency planning.

HISTORY

The history of the Commission's handling of this issue shows exactly why the Commission's decision today is so disturbing. Rather than simply allowing the issue to be considered by a licensing board, a step that probably would have added about a week of hearing time to the San Onofre and Diablo Canyon proceedings, the Commission has instead followed a tortuous path from adjudication to generic rulemaking to case-by-case consideration, to generic adjudication, only to end up right back at generic rulemaking.

In early 1981 the staff took the position in the *San Onofre* proceeding that consideration of the complicating

effects of earthquakes up to the Safe Shutdown Earthquake (SSE) was appropriate. The staff disagreed, however, when the Licensing Board tried to raise *sua sponte* the issue of the effects of earthquakes exceeding the SSE. The Commission on its own motion ordered the Licensing Board not to consider "the impacts on emergency planning of earthquakes which cause or occur during an accidental radiological release." *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI 81-33, 14 NRC 1091(1982). The Commission determined that its regulations did not require such consideration and concluded that whether the regulations should require such consideration was a generic issue to be decided by rulemaking. *San Onofre,* 14 NRC at 1091-92 (1981).

Based on the *San Onofre* decision, the Licensing Board in the Diablo Canyon operating license proceeding refused to allow any consideration of the effects of earthquakes on emergency planning at the Diablo Canyon site. There was, therefore, no opportunity to litigate any issue connected with the complicating effects of earthquakes on emergency planning.

After the Diablo Canyon Board's decision, the staff on June 22, 1982, issued a memorandum which stated that it was the staff's technical judgment that a generic rulemaking was not necessary because of the very low likelihood of earthquakes in most parts of the contry. However, the staff took the view that for California and other areas of high seismic risk in the Western United States explicit, site specific consideration of the effects of earthquakes on emergency planning is necessary. As the staff explained:

> It is the judgment of the staff that for most sites earthquakes need not be explicitly considered for emergency planning purposes because of the very low likelihood that an earthquake severe enough to dis-

> turb onsite or offsite planned responses will occur concurrently with or cause a reactor accident. Planning for earthquakes which might have implications for response actions or initiate occurrences of the "Unusual Event" or "Alert" classes in areas where the seismic risk of earthquakes to offsite structures is relatively high may be appropriate (e.g., for California sites and other areas of relatively high seismic hazard in the Western U.S.). Memorandum to the Commissioners from William Dircks, Executive Director for Operations, dated June 22, 1982, entitled "Emergency Planning and Natural Hazards," p.1.

The staff went on to say that it requests applicants for licenses for California facilities and the Federal Emergency Management Agency (FEMA) to consider earthquake effects in their emergency planning and review. Memorandum of June 22, 1982, Enclosure at 3-4. In fact, at both San Onofre and Diablo Canyon the staff required the license applicants to specifically consider this issue.

The Commission realized that this position by the staff seemed to contradict the Commission's *San Onofre* decision and thus cast doubt on the validity of the Licensing Board's ruling in the Diablo Canyon case. The Commission asked the staff to elaborate and in a further memorandum, the staff repeated its conclusion that "planning for earthquakes which might have emergency preparedness implications may be warranted in areas where the seismic risk to offsite structures is relatively high (e.g. California sites . . .)." Memorandum to Chairman Palladino from William Dircks, Executive Director for Operations, dated January 13, 1984, entitled "Emergency Planning and Seismic Hazards," p. 2, f.n.2. The staff also stated that it thought current emergency planning review criteria were adequate for this. *Id.*

Given this position by the staff, the Commission decided to ask the parties to the Diablo Canyon proceeding whether and under what circumstances the effects of earthquakes on emergency planning should be considered for the Diablo Canyon plant. *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI 84-4, 20 NRC — (April 3, 1984). The Commission, referring to the staff's January 1984 memorandum, noted that the staff appeared "to believe that some specific consideration of the effects of seismic events may be warranted for plants located in areas of relatively high seismicity." CLI 84-4, Slip Opinion at 2.

In its response to the Commission's order, the staff attempted to reverse course. Staff Counsel explained that while staff stated in its January 13, 1984 memorandum that "seismic events are considered and evaluated to a limited extent as part of our current emergency planning reviews, those staff reviews are informal and do not reflect a required licensing element which must be satisfied in order to warrant issuance of a license".[1] "NRC Staff's Memorandum Regarding Consideration of Effects of Earthquakes on Emergency Planning (CLI-84-4)", dated May 3, 1984, p.3, f.n.2.

COMMISSION DECISION

In its decision today, the Commission has concluded that there is no reason to depart from its decision in *San*

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[1]The flaw in the staff's argument is obvious. Having acknowledged that it is concerned enough about the issue to require licensees to consider it, the staff cannot now argue that "informal" review by the staff is a satisfactory substitute for formal review in individual licensing proceedings. If the issue is material to the Commission's licensing decision, as the staff's own statements and actions concede, then the agency must admit that satisfactory resolution of the issue is a required licensing element.

Onofre that the NRC's regulations "do not require consideration of the impacts on emergency planning of earthquakes which cause or occur during an accidental release," for Diablo Canyon and that the determination of whether to amend the regulations to include the consideration of earthquakes should be addressed as a generic matter. (CLI-84-12) Slip Op. at 1. There are several problems with the Commission's decision and its underlying rationale.

The cornerstone of the Commission's decision is the Commission's conclusion that the probability of an earthquake disrupting an emergency response is so low that it need not be considered in emergency planning. The basis for the Commission's conclusion is its determination that for various reasons there is unlikely to be a radiological release and an earthquake at the same time. The Commission's arguments on this score ignore one of the fundamental precepts of emergency planning: we plan for low probability occurrences because no matter how safe we try to make nuclear power plants there is always a possibility that some event will occur which will require use of one or more aspects of emergency planning. The probability arguments used by the Commission are really arguments that we do not need *any* emergency planning, rather than that we need not consider earthquakes in emergency planning. The Commission simply asserts that there is a low likelihood of a release and an earthquake at the same time and assumes that that ends the inquiry.

Unfortunately, the Commission ignores the fact that safety calculations are subject to some uncertainties. The philosophy behind emergency planning is to recognize this uncertainty and to provide defense in depth in protecting the public. Indeed, the Commission's emergency planning regulations are founded on the judgment that adequate emergency planning is an essential element in

protecting the public health and safety independent of the Commission's other regulations and safety reviews focusing on the design of the planet itself. Obviously, we do not plan for every conceivable but highly unlikely event. We should not, for example, waste resources planning for the effects of hurricanes on emergency responses in Kansas or for snow in Southern California. Instead, we plan to take into account the natural phenomena which present the more likely risks for a particular area. Thus, we consider hurricanes for plants in Florida, tornados for plants in the Midwest, and volcanic eruptions in the Pacific Northwest. By the same token, we should consider the complicating effects of earthquakes for plants in high seismic risk areas such as California.

The Commission tells us, however, that the probability of an earthquake disrupting an emergency response in an Emergency Planning Zone (EPZ) is too low even to be considered. To apply this argument to California, where almost 90 percent of the seismic activity in the United States occurs and where earthquakes which damage, obstruct or disrupt roads, buildings, bridges and communications networks occur with some regularity, simply ignores common sense. In support of this assertion, the Commission contends that the Diablo Canyon site is located in an area of low to moderate seismicity. This argument is based upon an analysis in the record of the recurrence rate for earthquakes in the central California coastal region for the years 1950 through 1974. What the Commission does not mention, however, is that the only plant in the country with a comparable SSE and OBE (Operating Basis Earthquake) — the key bases for the seismic design of the plant — is San Onofre (.67g and .34g respectively). In fact, the SSE's and OBE's for plants in other parts of the country are significantly lower (for other plants the SSE is typically .25g or less and the typical OBE is .11-.12g, with the highest being .13g) than

those for Diablo Canyon (SSE of .75g and OBE of .20g). Clearly, by requiring the plant to be designed to withstand an earthquake with ground motions almost twice those of other plants in the country, the Commission explicitly made the technical judgment that the earthquake risk for the Diablo Canyon area is not comparable to other areas of the country, and is, in fact, much higher.[2]

Further, the Commission's argument must be considered in light of the other natural phenomena the Commission includes in its consideration of emergency planning. If the probability of an earthquake disrupting an emergency response in an EPZ in California is too unlikely to be considered, that probability must by definition be much lower than the probability of disruption caused by the other natural phenomena which the Commission does consider. It must, for example, be less likely than the

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[2]Publicly available information compiled by the U.S. Geological Survey (USGS) would seem to indicate that earthquakes of sufficient magnitude to cause possible damage, obstruction or disruption to roads, buildings, bridges and communication networks occur throughout many parts of California, including the San Luis Obispo area, with some regularity. "Earthquake History of the United States", Publication 41-1, 1982 Reprint with Supplement. According to this information, four earthquakes have occurred in the immediate San Luis Obispo area since 1830, and at least one of these earthquakes has been of magnitude 7-8 on the Modified Mercalli scale. *Id.*, pp. 138, 140, 141, 156, 162, 164. In addition, two other earthquakes, of magnitudes 6.5 and 7.5, have occurred within 50 miles of the Diablo Canyon site since 1922. "Earthquake Epicenter Map of California, 1900 through 1974", State of California, the Resources Agency, Department of Conservation 1978. This publicly available information, although not in the record of the Diablo Canyon proceeding, would also appear to contradict the Commission's assertions, regarding the frequency of occurrence of earthquakes in the vicinity of the Diablo Canyon site which are sufficiently severe to cause damage to structures and disrupt communications. Much of this same information is also in the FSAR for Diablo Canyon, which is a part of the record in this proceeding.

probability that a tornado will disrupt an emergency response in an EPZ in the Midwest or that a hurricane will disrupt an emergency response in a California EPZ.

The probability that a tornado will travel through a particular 10 mile area and thereby initiate or disrupt response to an emergency at a nuclear plant must be quite low; yet, the Commission requires consideration of that issue for certain plants. Similarly, the probability of a hurricane striking the San Luis Obispo coastal area and initiating or disrupting an emergency response must also be quite low; yet the Commission considered that very issue in the Diablo Canyon case. I see no factual basis for the Commission's assertion that earthquakes in California are so much more unlikely than either of these events that earthquakes need not be considered.

The Commission's order also misses another very important point. Emergency planning is not relevant only to accidents resulting in the offsite release of radiation. Emergency planning is also relevant for responses to emergencies which do not result in a radiological release, including emergencies initiated or complicated by earthquakes below the SSE. For example, whether or not an earthquake results in the offsite release of radioactivity, an emergency plan must take into account the assurance of continued communication between a plant and offsite emergency response agencies, the ability to obtain damage estimates for the plant and the offsite transportation and communication facilities to provide data for decisions on appropriate responses, the availability of backup facilities to ensure continued functioning of an emergency response capability, and the ability to transport necessary personnel to a plant to deal with the emergency. In its June 22, 1982 memorandum to the Commission, the NRC staff recognized this:

> "There is no explicit guidance in [the Commission's regulations] as to the extent to which adverse earthquake conditions are to be taken into account in emergency planning at particular sites . . . The occurrence of earthquakes of a nature that could have implications for onsite or offsite response actions or initiate occurrences of the "Unusual Event" or "Alert" class is an adverse characteristic of the type discussed above." Memorandum at 3-4.

The staff went on to note that they ask applicants for licenses for California facilities and FEMA to consider such earthquakes (smaller than the Safe Shutdown Earthquake) in their emergency planning for this very reason.

The Commission simply ignores the fact that the staff has been requiring licensees for plants located in California to consider the effects of earthquakes on emergency planning. The staff has stated that while it does not think such consideration is necessary for plants in most areas of the country, "planning for earthquakes which might have emergency preparedness implications may be warranted in areas where the seismic risk to offsite structures is relatively high (e.g. California sites)".[3] Memoranda of

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[3]In its response to the Commission's order, staff counsel attempted to withdraw this conclusion. The fact remains, however, that staff has indeed been considering the complicating affects of earthquakes on emergency planning at California plants, including Diablo Canyon. Staff required PG&E to prepare a report on this issue. Presumably, the staff does not ask license applicants to look at issues which it thinks are irrelevant. Perhaps the staff's new position has something to do with the fact that for the only two plants located in "high seismic areas", the staff has now completed its review of seismic effects on emergency planning. This appears to be the only plausible reason for such a radical change in staff's position. Further, staff explained that what it really wanted was to consider this issue, but only "informally". See, above at p.5.

June 22, 1982 and January 13, 1984. The complicating effects of eart quakes on emergency planning were formally considered by the staff in the San Onofre proceeding, and were informally considered by the staff for Diablo Canyon. By their own actions, the agency's technical experts have demonstrated that they consider this issue to be material to the Commission's licensing decisions in these two cases. Given the fact that the staff experts on this issue have been concerned enough to consider it, I see no basis for the Commission's argument that in the cases of Diablo Canyon and San Onofre, seismic effects on emergency planning are irrelevant. Since the issue is clearly material to the agency's licensing decision in those two cases, the Commission is required by law to grant the parties an opportunity to litigate that issue. See, *UCS v NRC*, No. 82-2053 (D.C. Cir. May 25, 1984.)

Apparently recognizing the weaknesses in their low probability argument, my colleagues have also attempted to support their decision by arguing that the disruption to emergency response caused by fog, hurricanes and heavy weather are similar to the disruptions which may result from an earthquake. Thus, the Commission argues, emergency plans *implicity* have enough flexibility to deal with earthquakes as well. This is an interesting argument. Unfortunately, the Commission cannot point to any evidence in the record of this proceeding to support such a factual finding. Although the Diablo Canyon record includes information on natural phenomena other than earthquakes, there was no discussion in that record of earthquake effects, or whether the plans for dealing with other natural phenomena are flexible enough to implicitly include the effects of earthquakes. The Commission's conclusion seems, therefore, to be based on the Commission's intuitive feeling that the finding ought to be true rather than on any kind of factual record. This is pre-

cisely the type of factual question that should only be decided based upon a site-specific, factual record, developed and tested in a hearing (or at least after consideration of information in the record of a rulemaking specifically addressing this issue.)

Finally, the Commission has decided that the regulations are not sufficiently clear on whether earthquakes must be considered in emergency planning and so intends to conduct a generic rulemaking on the issue. The Commission disagrees with the staff's view that a generic rulemaking is not necessary, although it offers no persuasive reason for rejecting the staff's technical judgment on this question. Unfortunately, the Commission's belatedly renewed promise of a generic rulemaking appears to be little more than window dressing. The Commission's justification for not considering seismic effects on emergency planning at Diablo Canyon clearly shows that it has already decided the issue. If the Commission will not require the consideration of earthquakes for plants located in an area of the country where 90 percent of the seismic activity occurs, it is unlikely to conclude that they must be considered for plants elsewhere. Since the Commission appears to have already decided this fundamental issue, it is unclear what it hopes to accomplish with such a rulemaking. I have agreed to the Commission's decision to conduct such a rulemaking, but only because some consideration of this issue is better than no consideration at all.

It is absolutely amazing, the lengths to which the Commission will go to avoid finding that a party is entitled to a hearing on an issue. In this case, the Commission has constructed an elaborate, but flawed, rationale in an attempt to explain why earthquakes need not be considered in emergency planning for Diablo Canyon. The Commission has then proceeded, as a factual

matter, to consider the effects of earthquakes on emergency planning. As a last resort, the Commission has again promised to conduct a generic rulemaking on this issue, a promise that it made three years ago but did not keep. The unfortunate consequence of this delay has been to put the issue off until the two California plants have been licensed.

APPENDIX C

STATUTES AND REGULATIONS INVOLVED

1. ATOMIC ENERGY ACT OF 1954, SECTION 189(a), 42 U.S.C. § 2239(a):

In any proceeding under this chapter, for the granting, suspending, revoking, or amending of any license . . ., the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding. . . .

2. § 2012. CONGRESSIONAL FINDINGS:

The Congress of the United States makes the following findings concerning the development, use, and control of atomic energy:

* * *

(d) The processing and utilization of source, by-product, and special nuclear material must be regulated in the national interest and in order to provide for the common defense and security and to protect the health and safety of the public.

(e) Source and special nuclear material, production facilities, and utilization facilities are affected with the public interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure the common defense and security and to protect the health and safety of the public.

* * *

3. § 2133. COMMERCIAL LICENSES — CONDITIONS:

(a) The Commission is authorized to issue licenses to persons applying therefor to transfer or receive in inter-

state commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation arranged pursuant to section 2153 of this title, utilization or production facilities for industrial or commercial purposes. Such licenses shall be issued in accordance with the provisions of subchapter XV of this chapter and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purposes and provisions of this chapter.

* * *

Limitations

(d) No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 2153 of this title, or except under the provisions of section 2139 of this title.... In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

* * *

4. 10 C.F.R. § 50.47(A) AND (B):

§ 50.47 EMERGENCY PLANS.

(a)(1) Except as provided in paragraph (d) of this section, no operating license for a nuclear power reactor will be issued unless a finding is made by NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

(2) The NRC will base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented. A FEMA finding will primarily be based on a review of the plans. Any other information already available to FEMA may be considered in assessing whether there is reasonable assurance that the plans can be implemented. In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability.

(b) The onsite and, except as provided in paragraph (d) of this section, offsite emergency response plans for nuclear power reactors must meet the following standards:[1]

(1) Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

(2) On-shift facility licensee responsibilities for emergency response are unambiguously defined, ade-

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[1]These standards are addressed by specific criteria in NUREG-0654; FEMA-REP-1 entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants — for Interim Use and Comment", January 1980.

quate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

(3) Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

(4) A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

(5) Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

(6) Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

(7) Information is made available to the public on a periodic basis on how they will be notified and what

their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

(8) Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

(9) Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

(10) A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

(11) Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

(12) Arrangements are made for medical services for contaminated injured individuals.

(13) General plans for recovery and reentry are developed.

(14) Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

(15) Radiological emergency response training is provided to those who may be called on to assist in an emergency.

(16) Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

APPENDIX D

SUBSIDIARIES AND AFFILIATES OF PACIFIC GAS AND ELECTRIC COMPANY

Alaska California LNG Company

Alberta and Southern Gas Co. Ltd.

Alberta Natural Gas Company Ltd.

Calaska Energy Company

Eureka Energy Company

Gas Lines, Inc.

Natural Gas Corporation of California

Pacific Conservation Services Company

Pacific Gas Marine Company

Pacific Gas LNG Terminal Company

Pacific Gas Transmission Company

Pacific Indonesia LNG Company

Pacific Transmission Supply Company

Rocky Mountain Gas Transmission Company

Standard Pacific Gas Line Incorporated

PROOF OF SERVICE BY MAIL

I am a citizen of the United States and a resident of the City and County of Los Angeles; I am over the age of eighteen years and not a party to the within action; my business address is: 1706 Maple Avenue, Los Angeles, California.

On July 18, 1986, I served the within Petition for a Writ of Certiorari in re: *"San Luis Obispo Mothers For Peace, et al. v. United States Nuclear Regulatory Commission"* in the United States Supreme Court, October Term 1985, No. .....;

on the Parties in said action, by placing three copies thereof enclosed in a sealed envelope with postage fully prepaid, in the United States post office mail box at Los Angeles, California, addressed as follows:

Secretary
Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

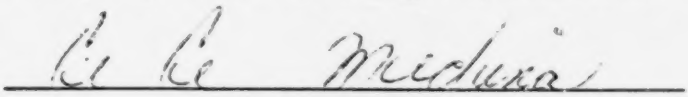
Solicitor General
Department of Justice
Washington, D.C. 20530

William T. Coleman, Jr.
O'Melveny & Myers
1800 M Street, N.W.
Washington, D.C. 20036

All Parties required to be served have been served.

I certify (or declare), under penalty of perjury, that the foregoing is true and correct.

Executed on July 18, 1986, at Los Angeles, California.



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